

FIG. 1

Reader Network / Site

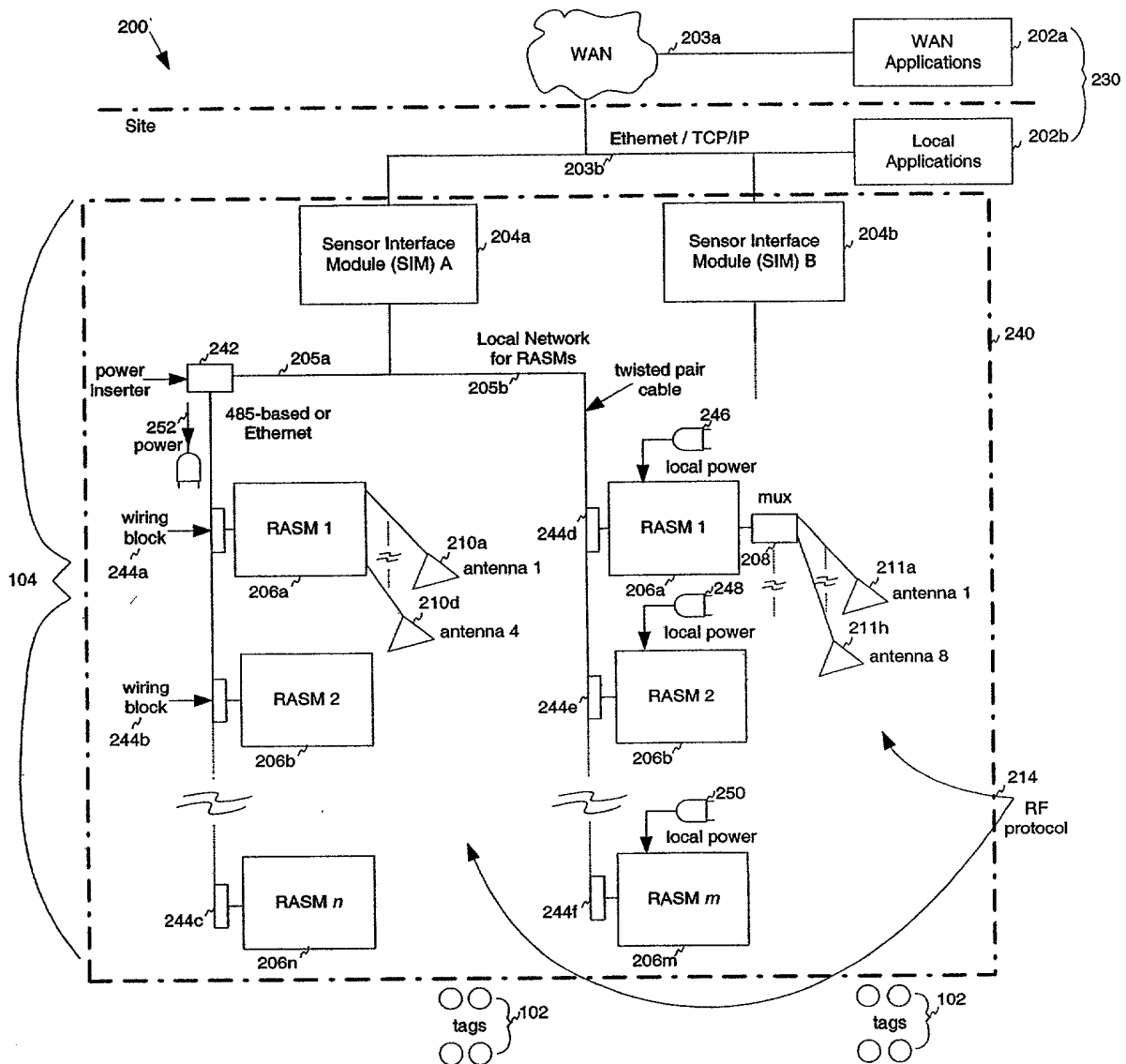


FIG. 2

Reader Data '0'

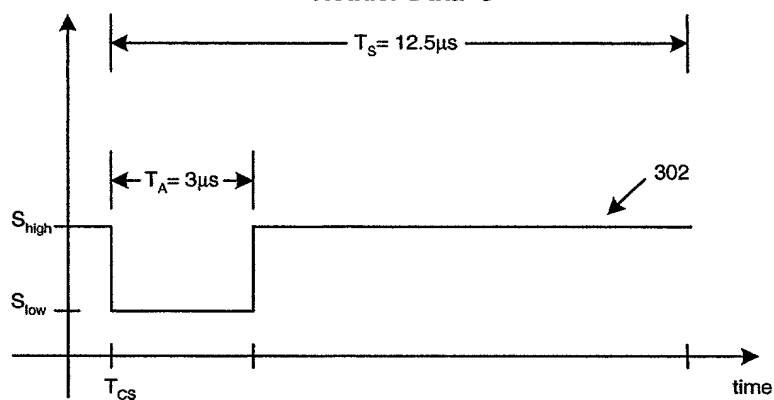


FIG. 3

Reader Data '1'

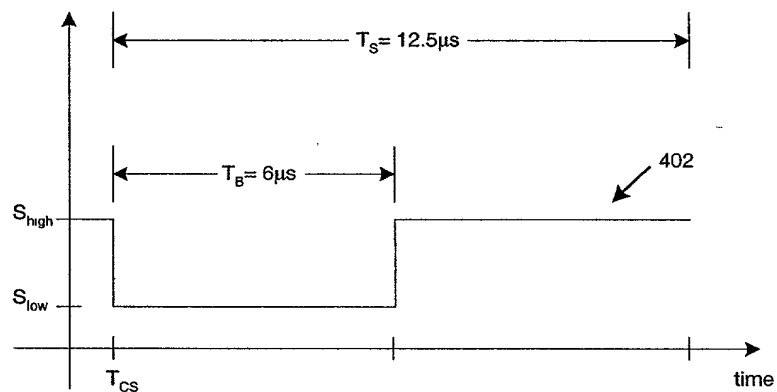


FIG. 4

Reader Data 'null'

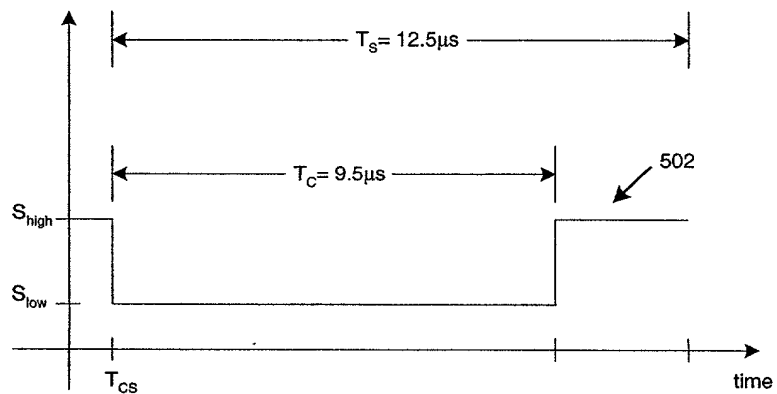


FIG. 5

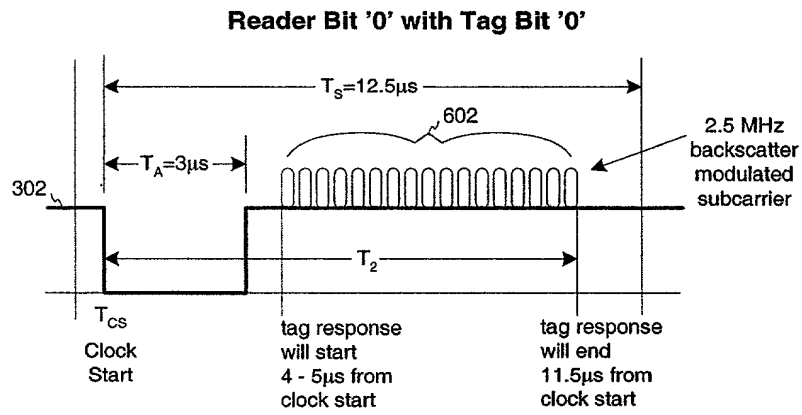


FIG. 6

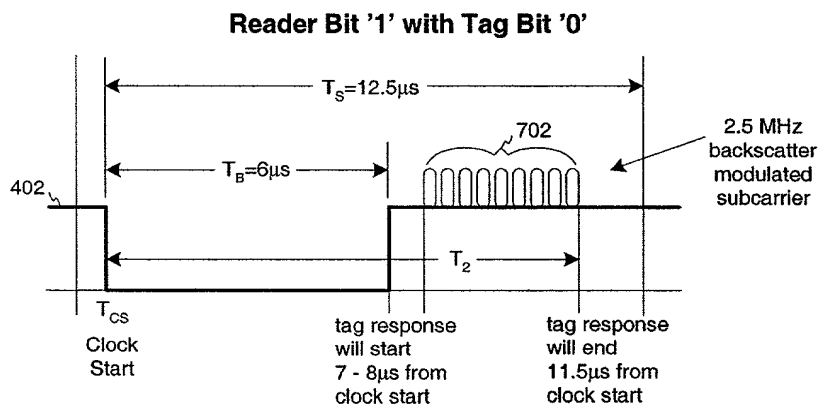


FIG. 7

Reader Bit '0' with Tag Bit '1'

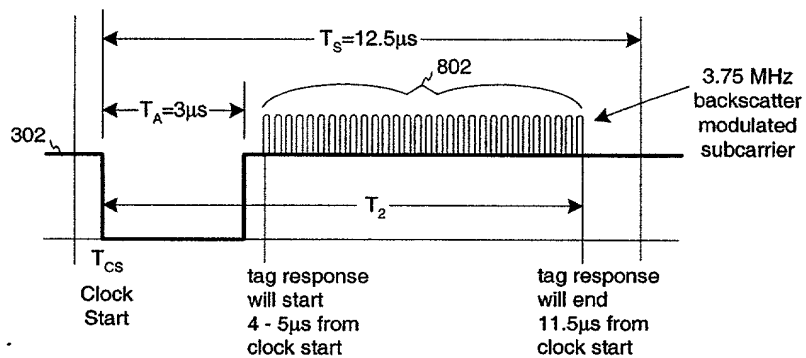


FIG. 8

Reader Bit '1' with Tag Bit '1'

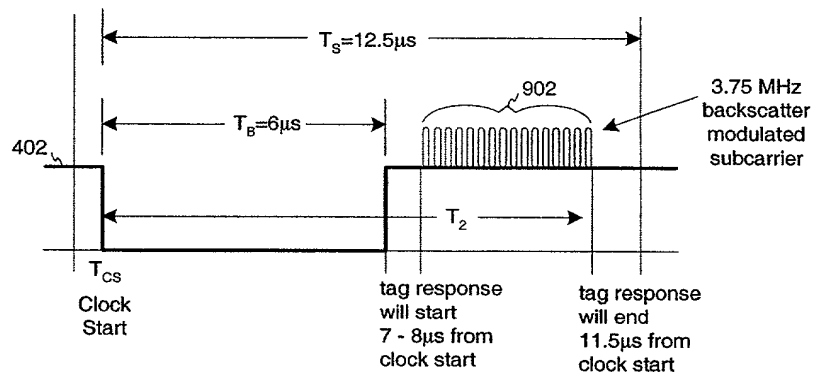


FIG. 9

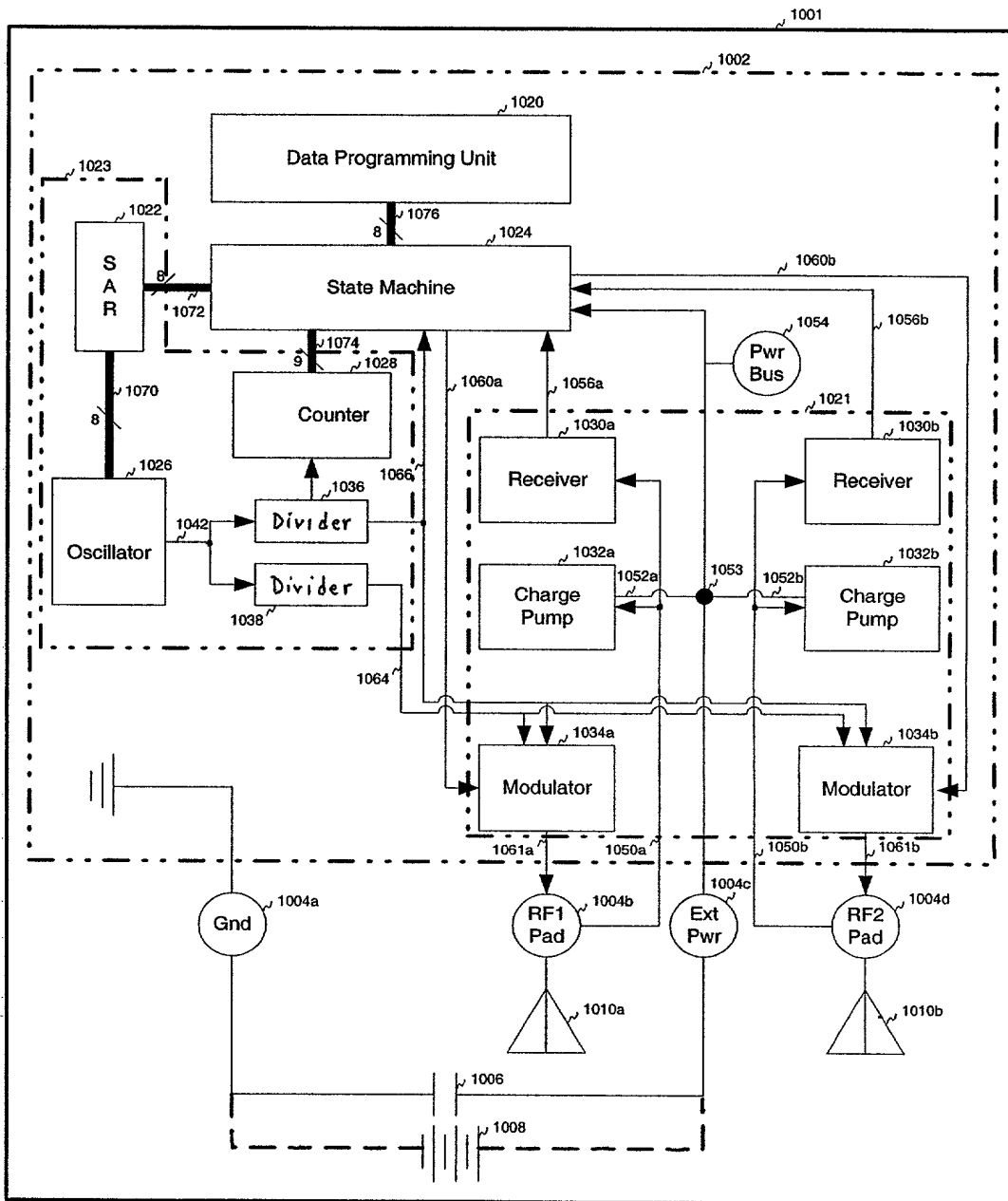


FIG. 10

Block diagram of a programmable transmitter and receiver system 1001. The system is enclosed in a dashed box 1002. Key components include:

- Data Programming Unit 1020:** Connected to the State Machine 1024 via a bus 1076.
- State Machine 1024:** The central control unit, connected to the SAR 1022, Counter 1028, and various other blocks.
- SAR 1022:** Successive Approximation Register, connected to the State Machine 1024 via bus 1072.
- Counter 1028:** Connected to the State Machine 1024 via bus 1074.
- Oscillator 1026:** Connected to the SAR 1022 via bus 1070 and to two Dividers 1036 and 1038 via bus 1042.
- Dividers 1036 and 1038:** Connected to the Counter 1028 via bus 1066.
- Receiver 1030a:** Connected to the State Machine 1024 via bus 1060a and to the Charge Pump 1032a via bus 1056a.
- Charge Pump 1032a:** Connected to the Modulator 1034a via bus 1052a.
- Modulator 1034a:** Connected to the RF1 Pad 1010a via bus 1061a.
- RF1 Pad 1010a:** Connected to the Ext Pwr 1004c via bus 1050a.
- Ext Pwr 1004c:** External power source, connected to the Sensor Pad 1104d via bus 1050b.
- Sensor Pad 1104d:** Connected to the External Sensor Material 1111.
- Analog to Digital 1180:** Connected to the State Machine 1024 via bus 1177 and to the Pwr Bus 1054.
- Pwr Bus 1054:** Power distribution bus, connected to the State Machine 1024, Analog to Digital 1180, and the Sensor Pad 1104d.
- Ground 1004a:** Connected to the Oscillator 1026 and the RF1 Pad 1010a.
- Battery 1006:** Connected to the Ground 1004a and the Ext Pwr 1004c.
- Capacitor 1008:** Connected to the battery 1006.

0201-20b.vsd/7

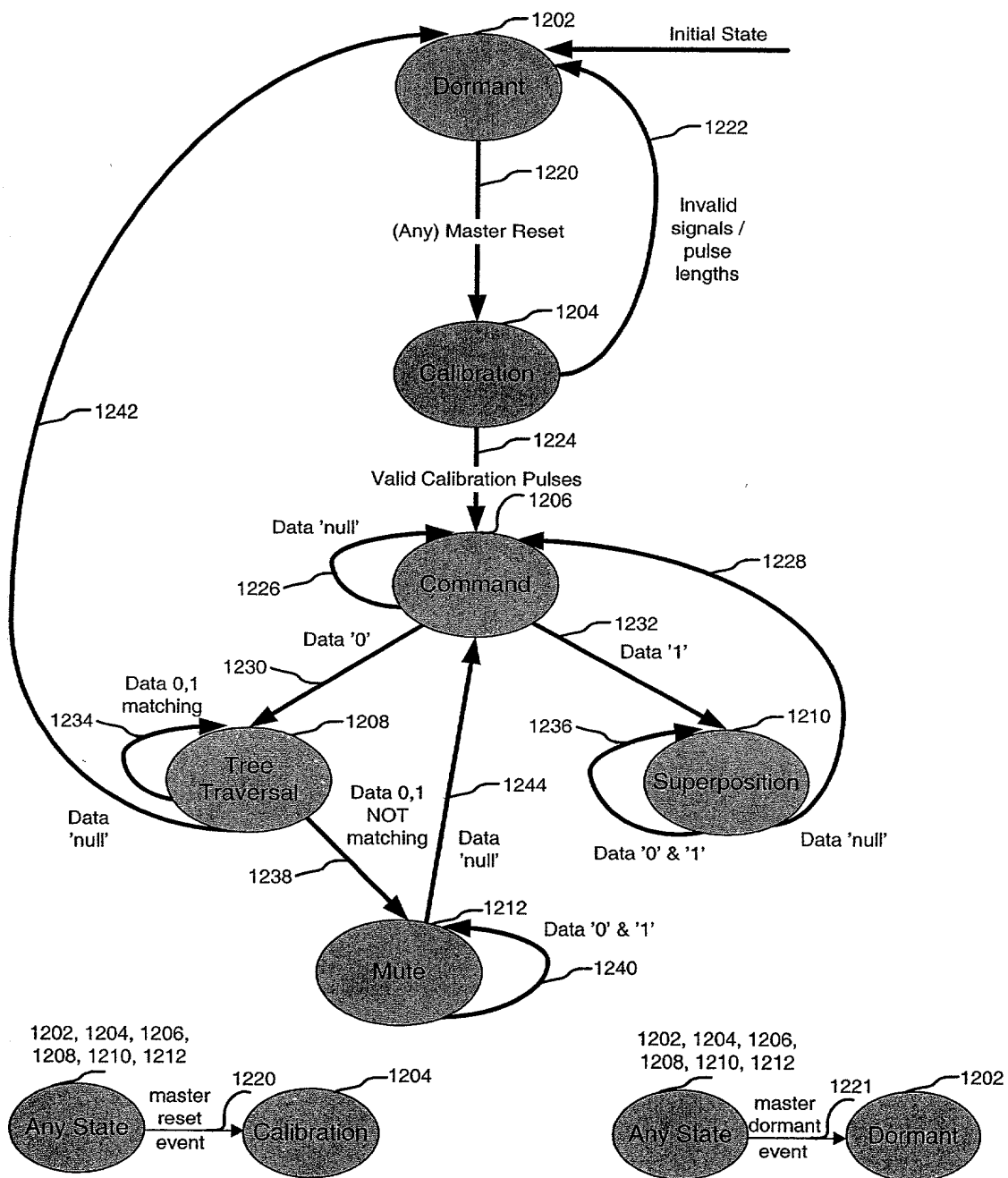


FIG. 12A

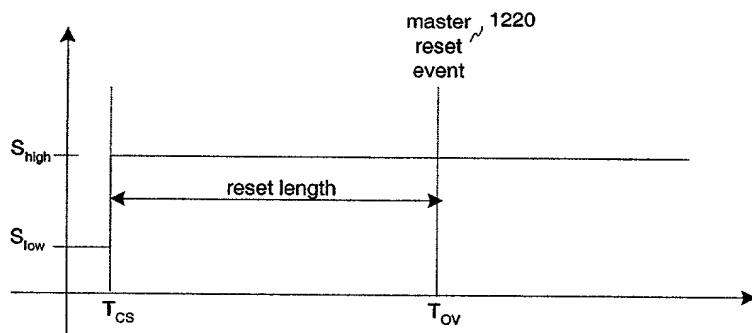


FIG. 12B

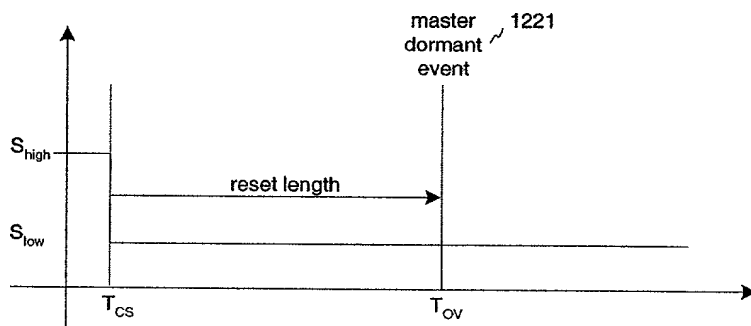


FIG. 12C

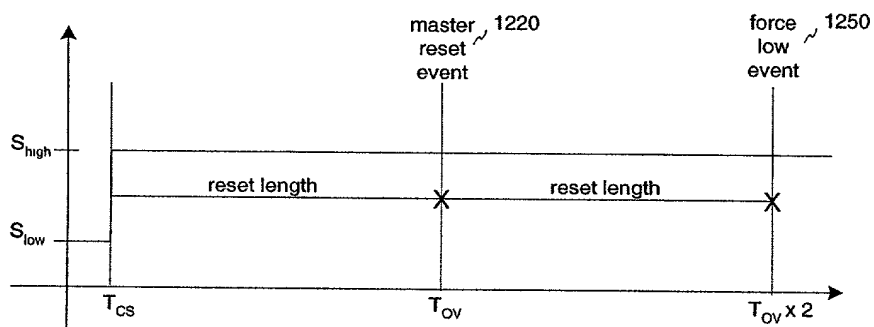


FIG. 12D

202120b.vsd

Binary Traversal Flowchart from a Tag Perspective

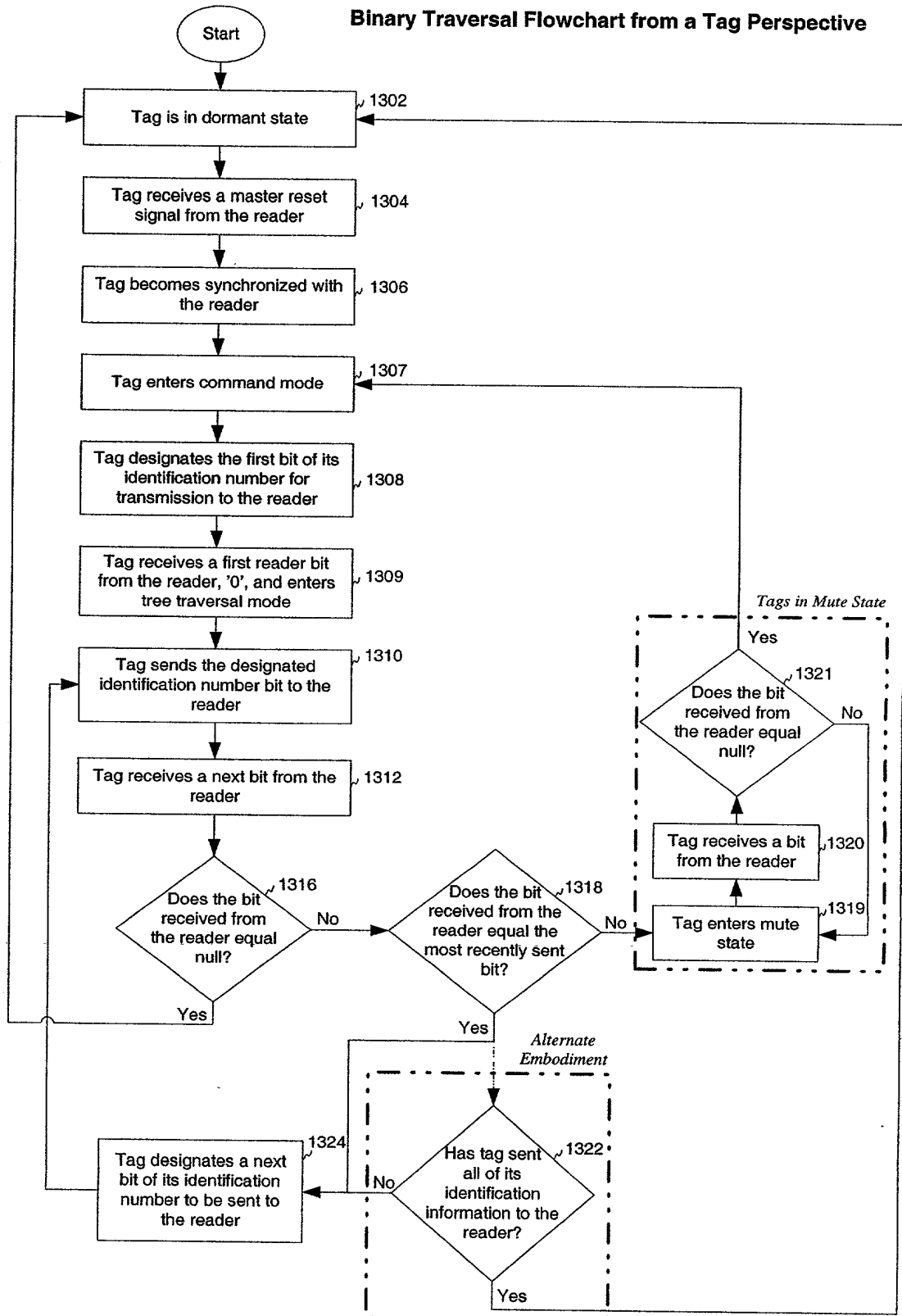


FIG.13

Read Specific Tag, Reader Perspective

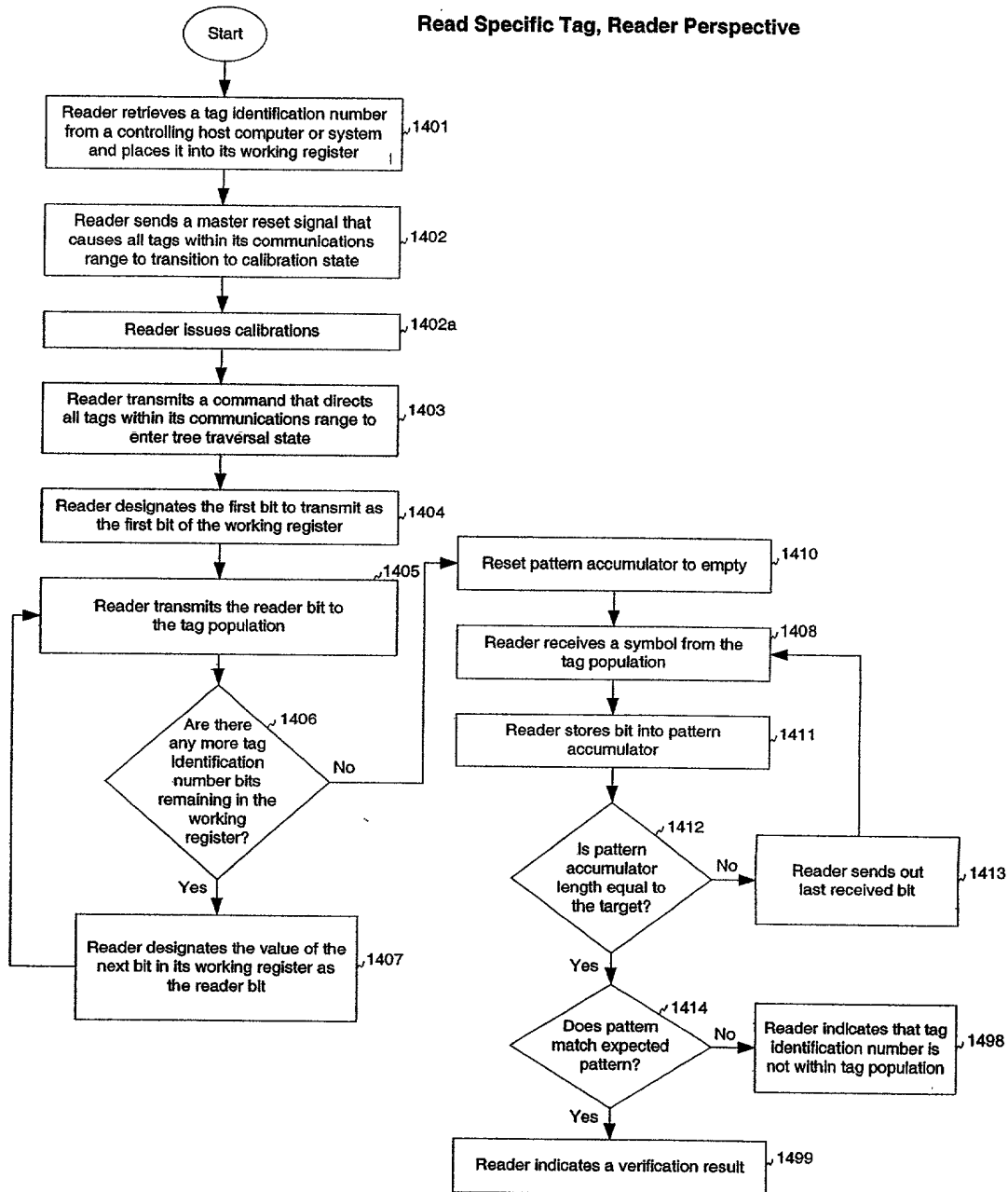


FIG. 14A

Read Specific Tag, Alt., Reader Perspective

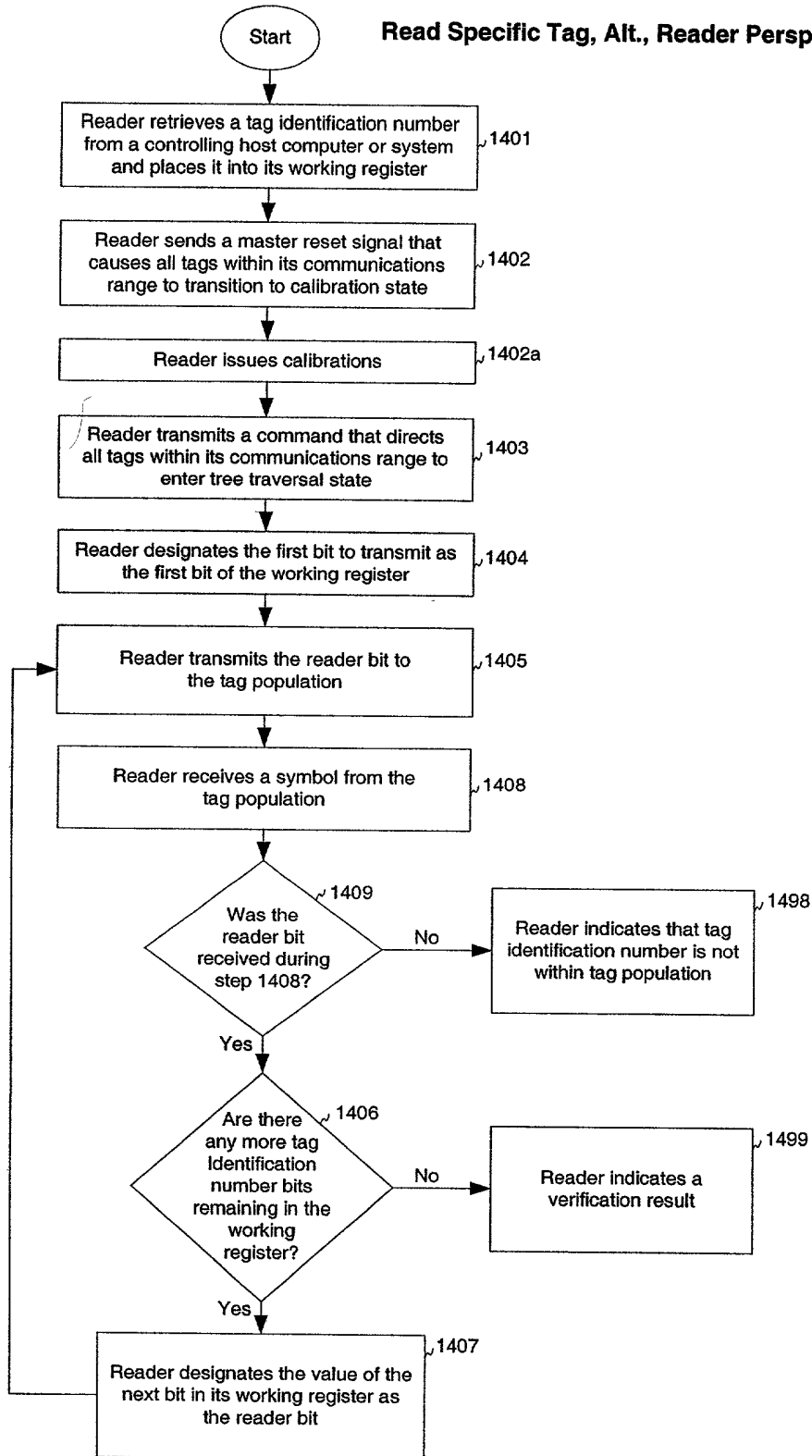


FIG. 14B

Read All Tags, Reader Perspective

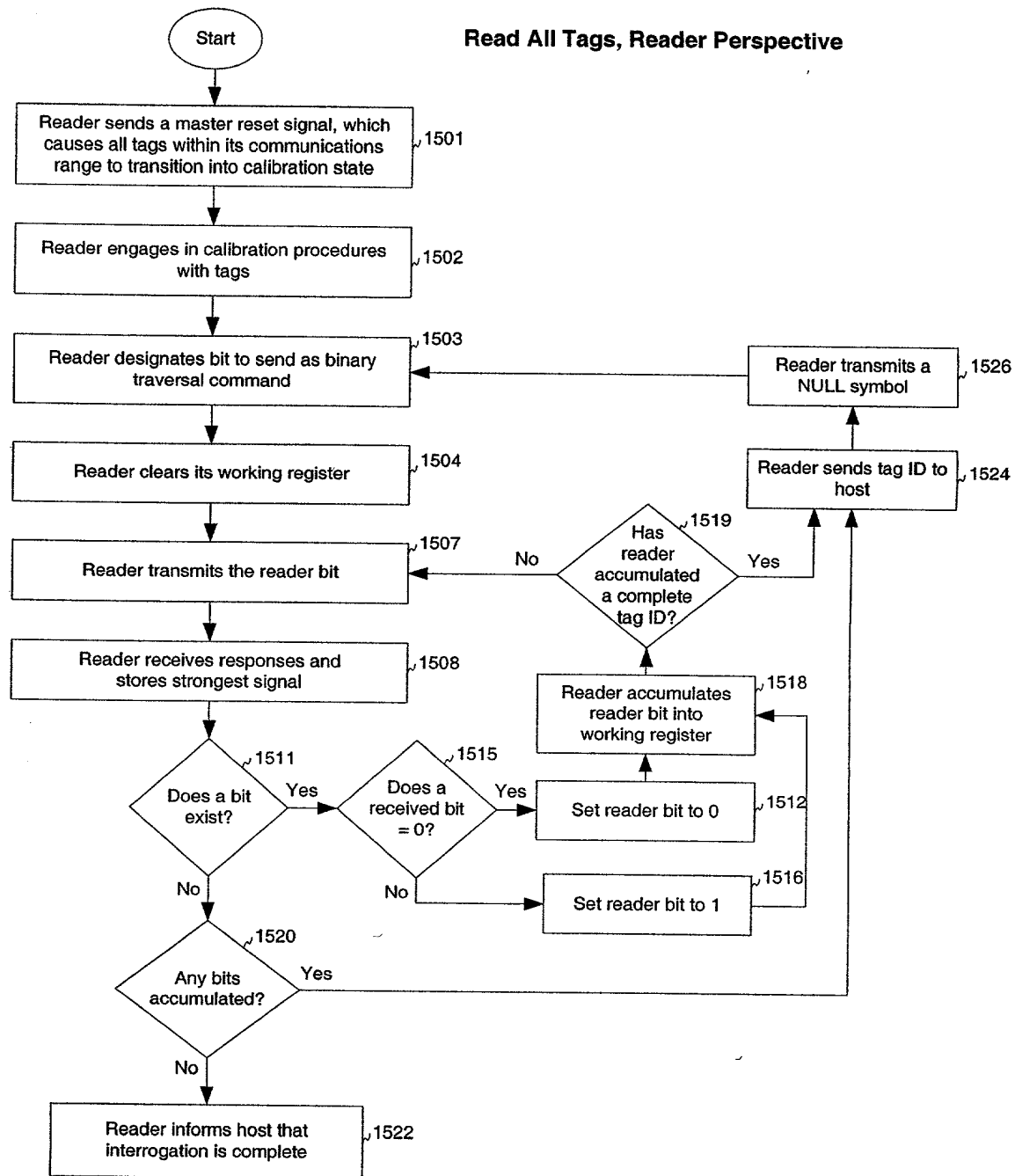


FIG. 15A :

Read All Tags, Alt., Reader Perspective

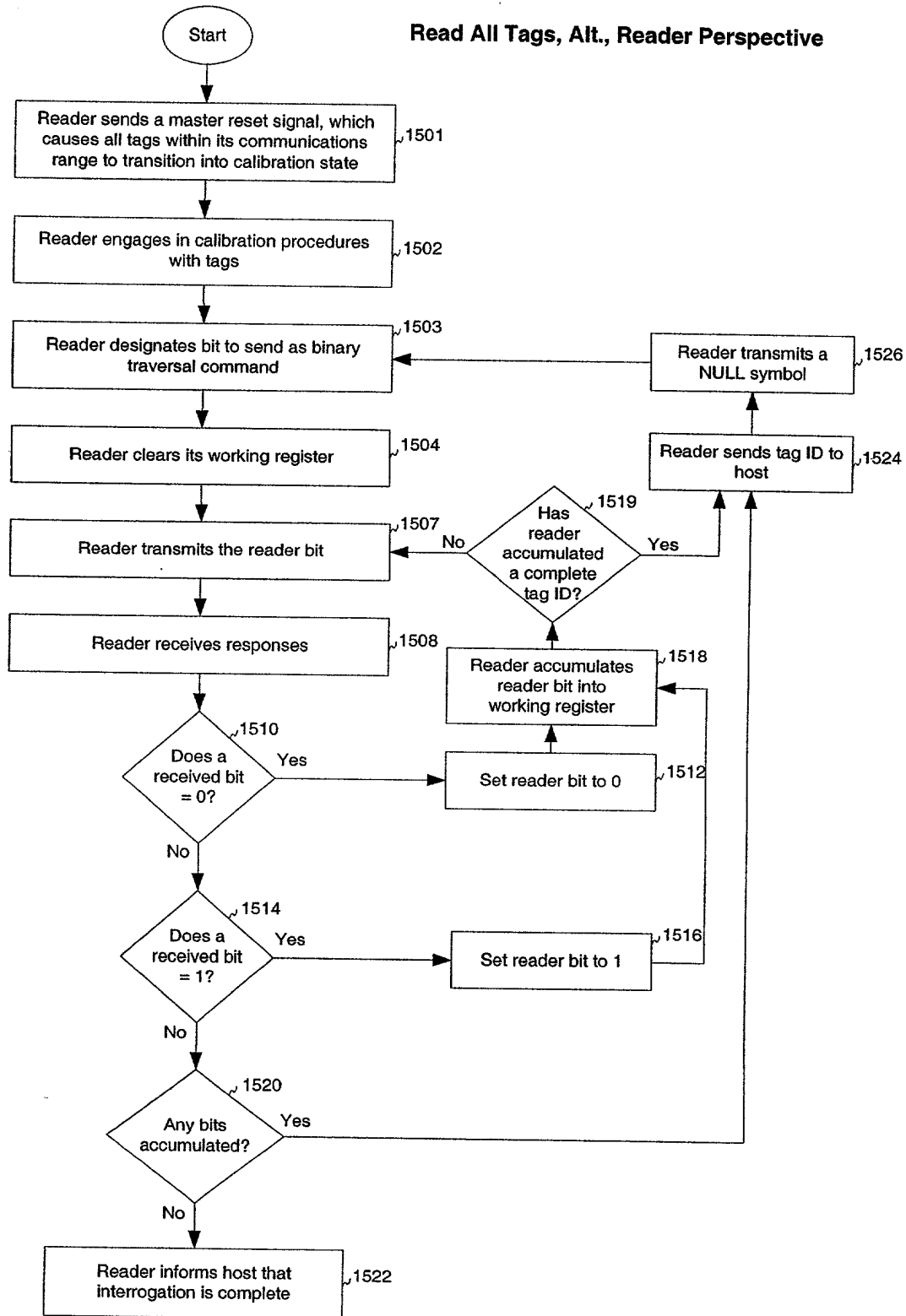


FIG. 15B

Binary Traversal Paths and Tree for a 3-bit Tag Population

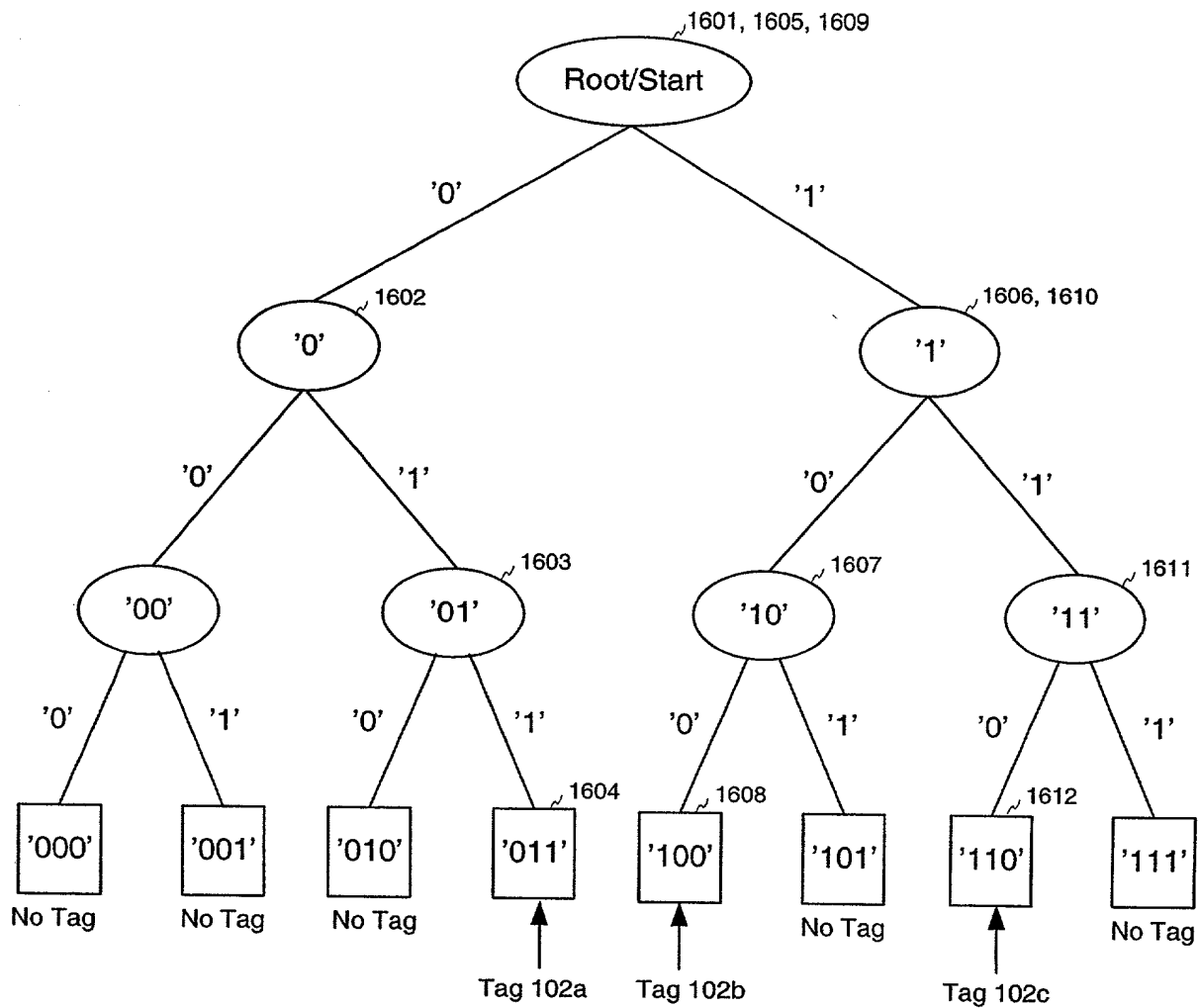


FIG. 16

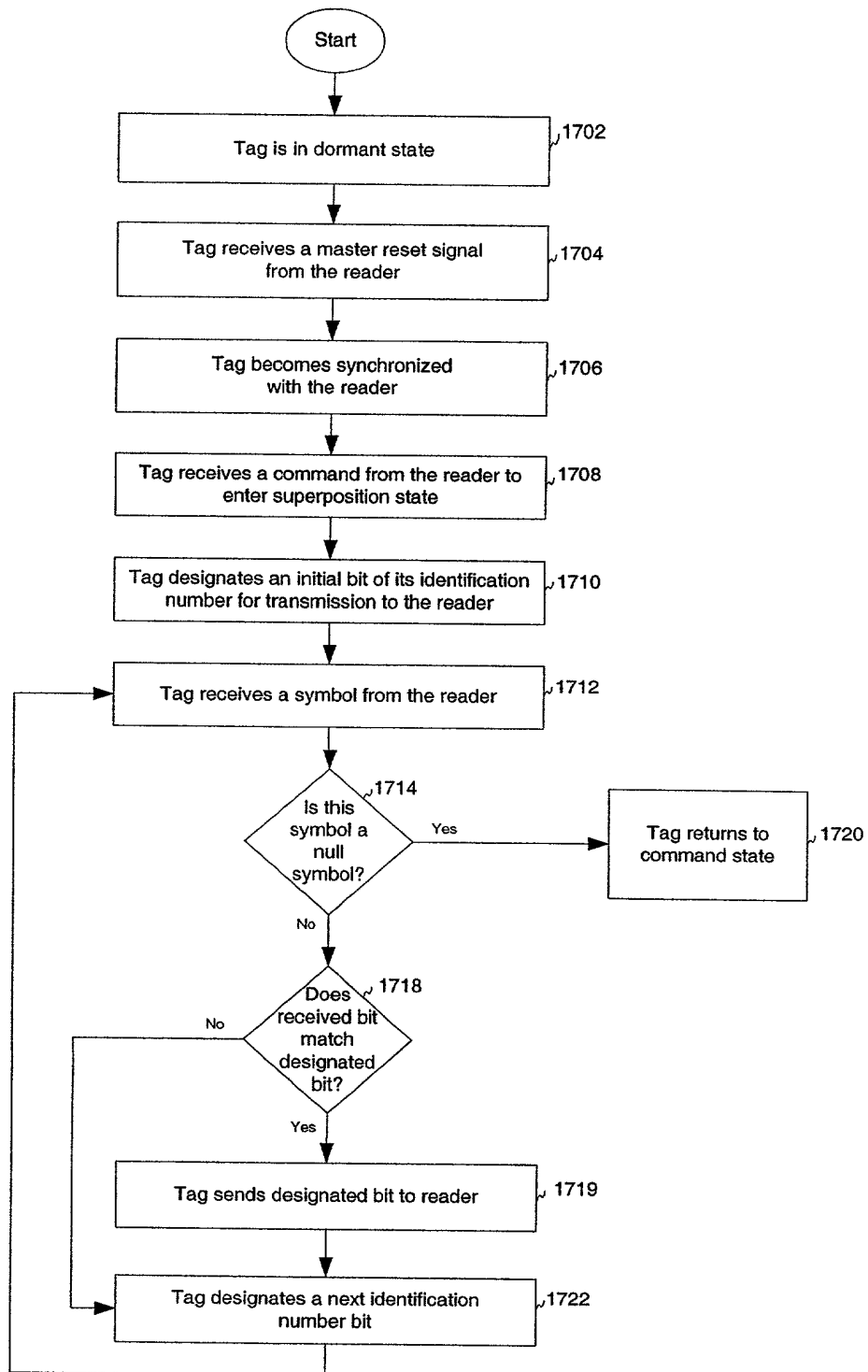


FIG. 17A

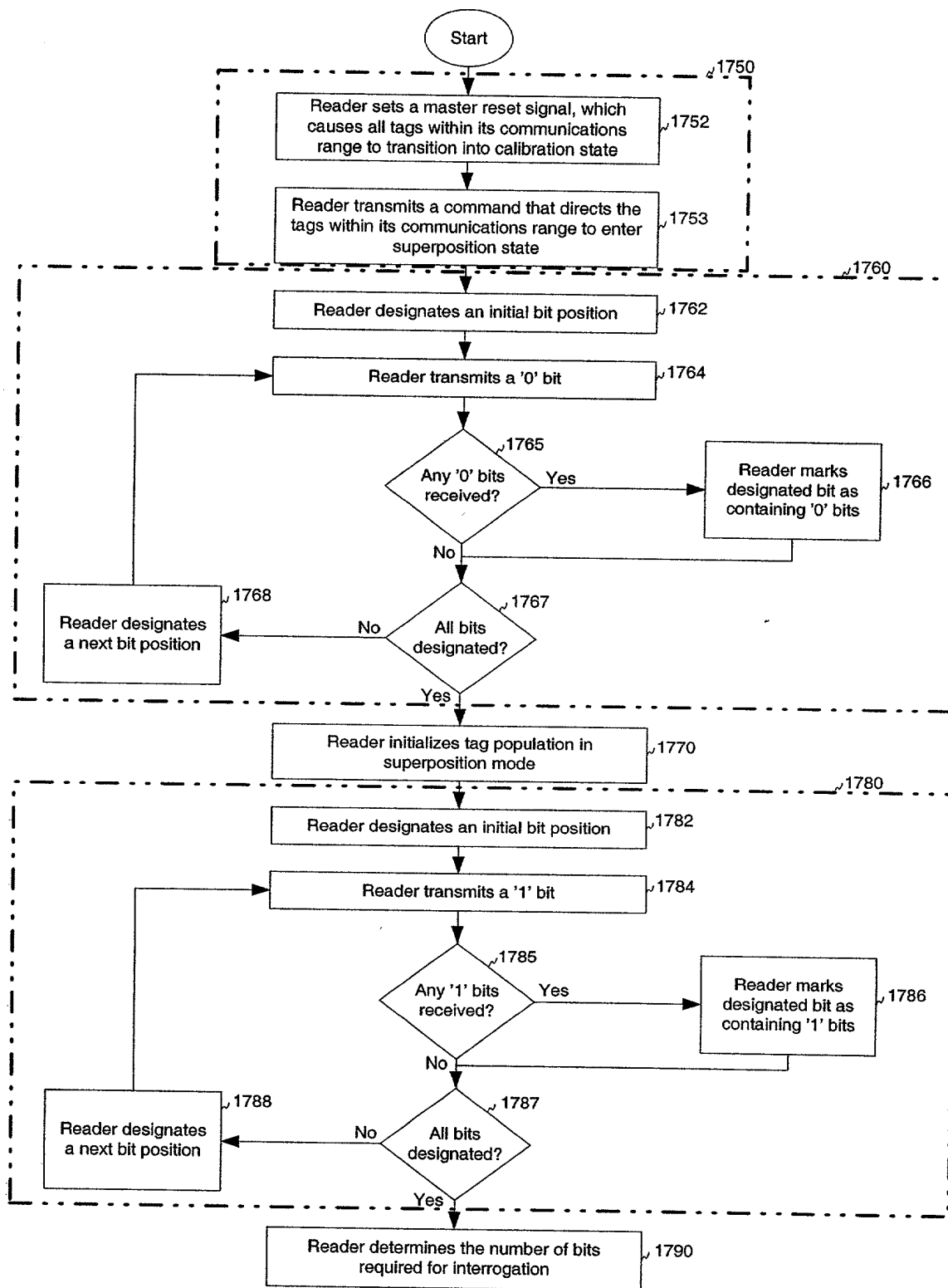


FIG. 17B

2021-2018-03-20 10:22:00

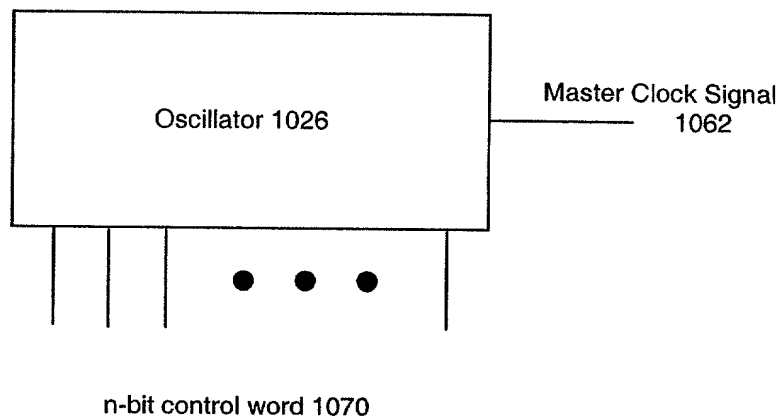


FIG. 18

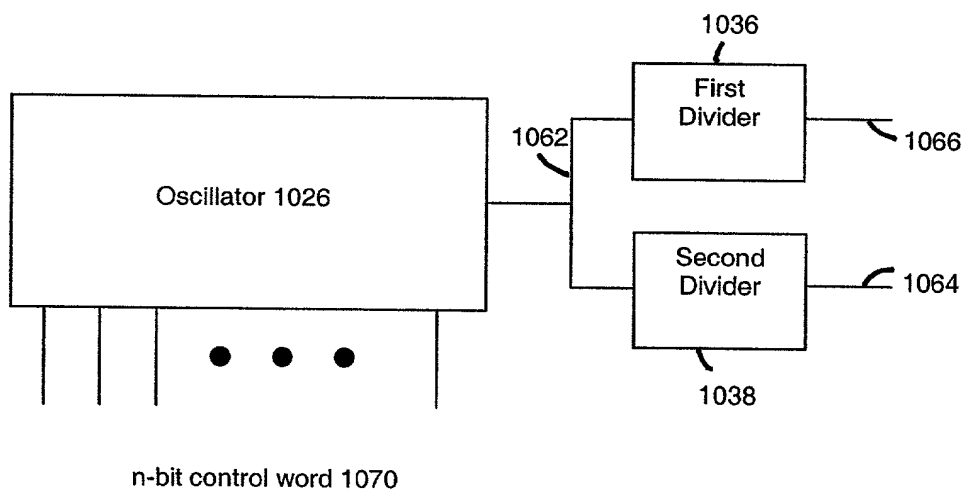


FIG. 19

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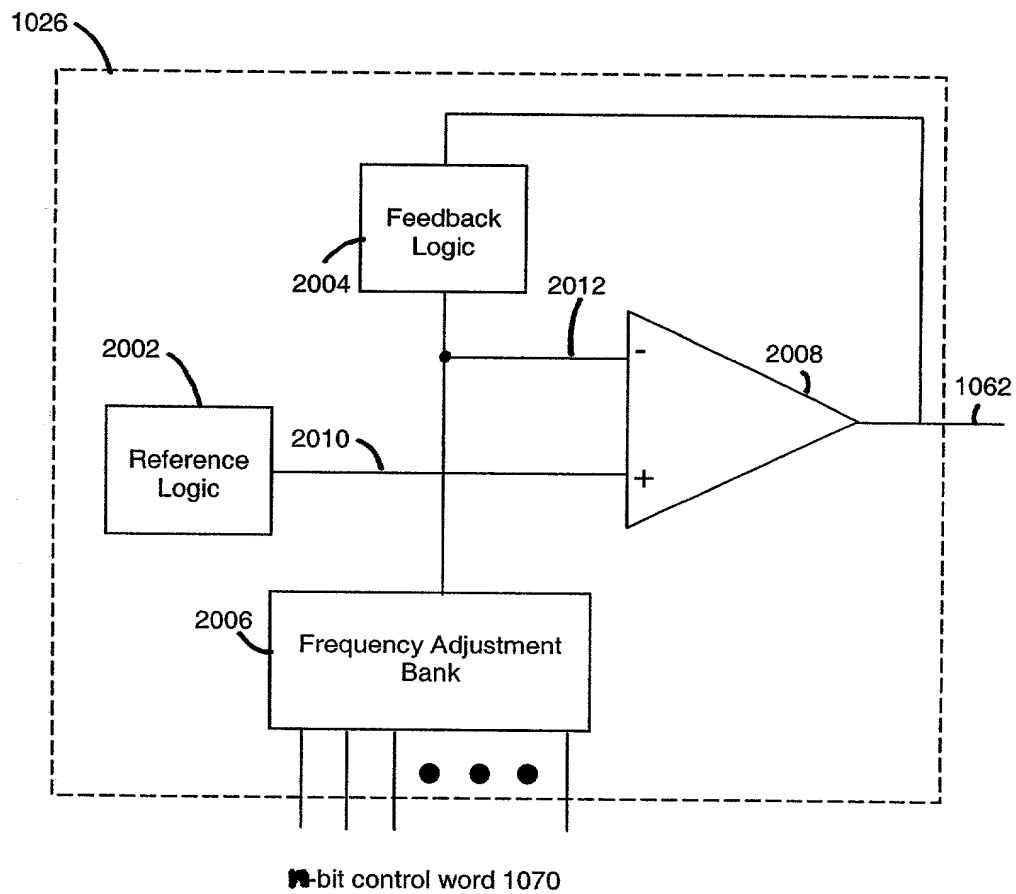


FIG. 20

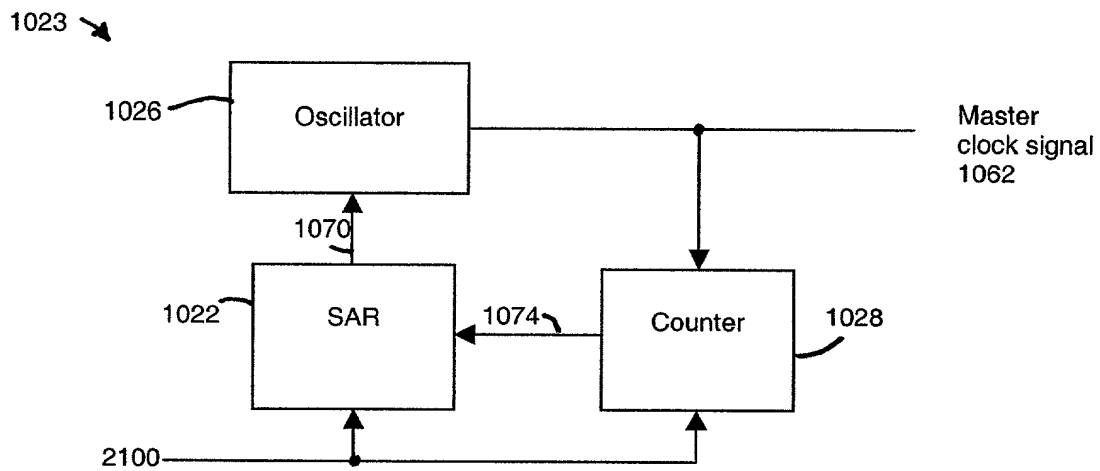


FIG. 21A

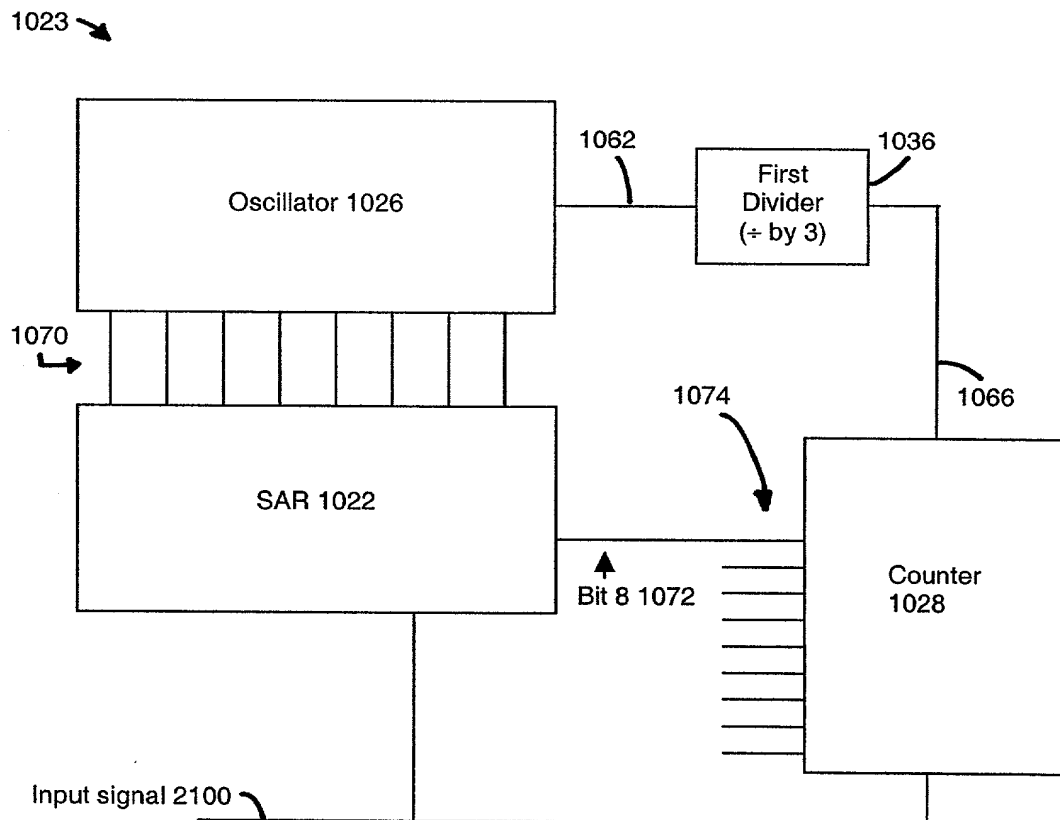


FIG. 21B

Conceptual implementation of SAR calibration

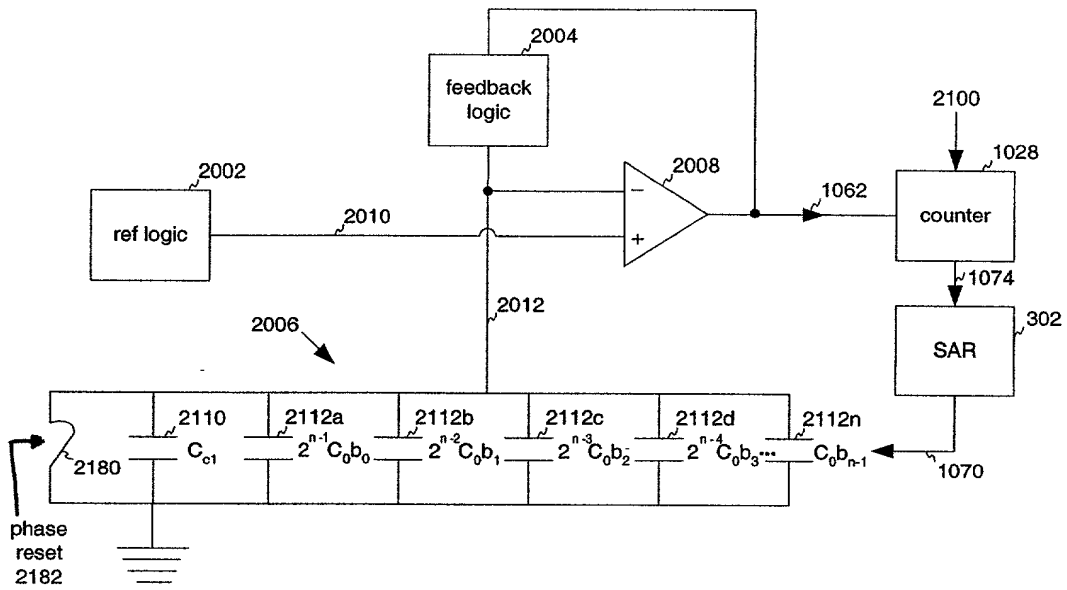


FIG. 21C

Physical implementation of adjustable capacitor bank

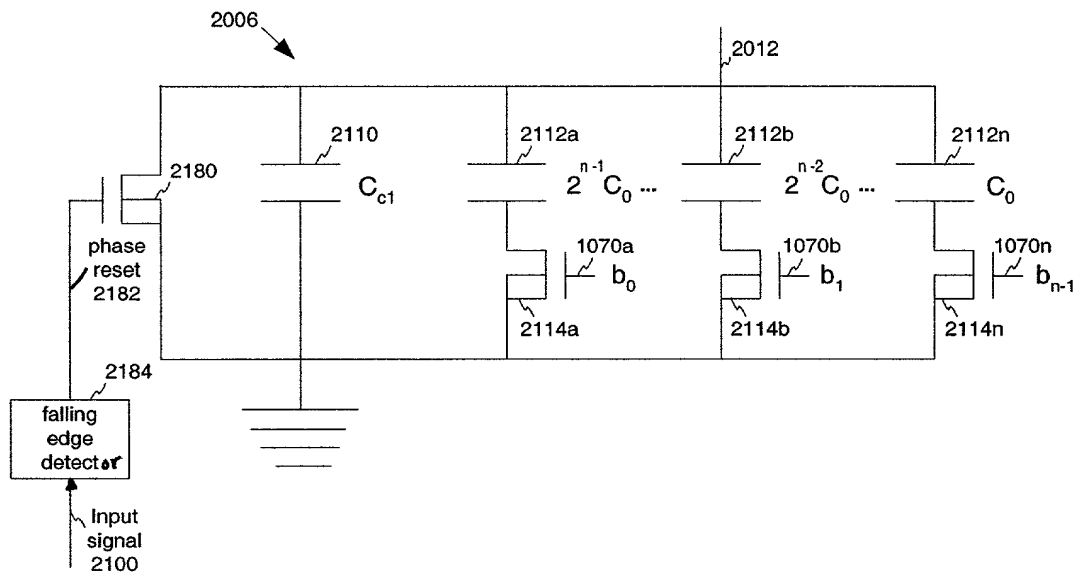
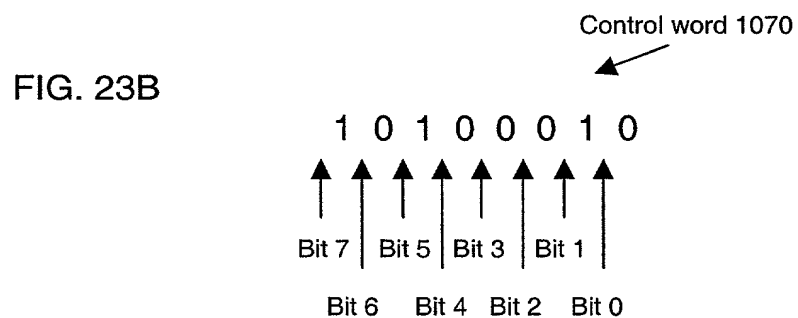
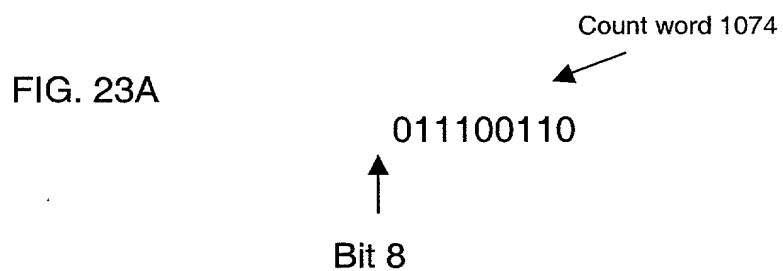
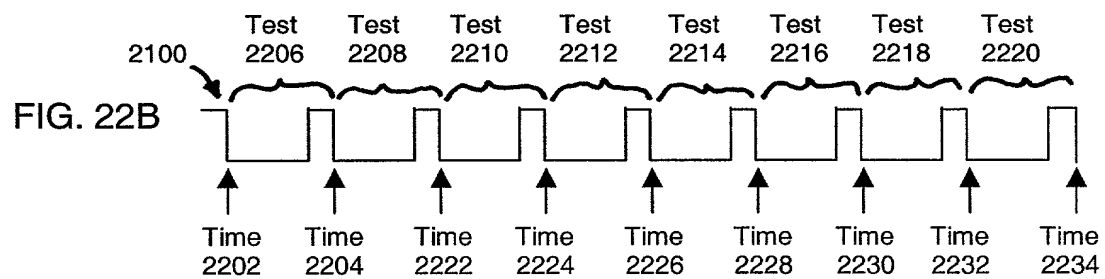
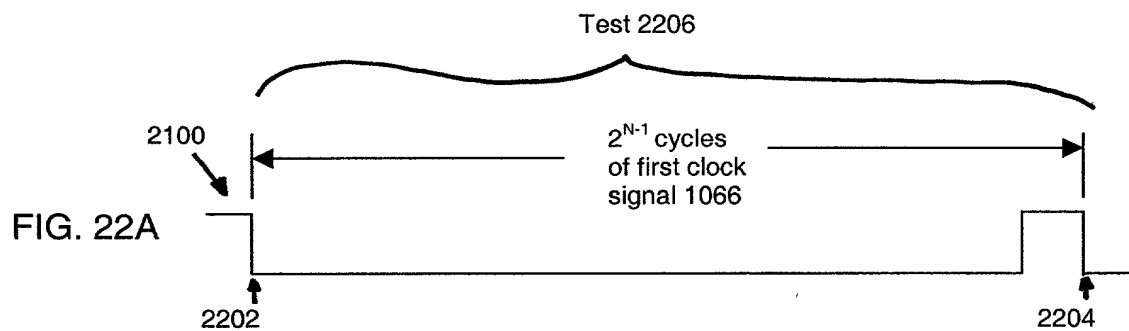


FIG. 21D



2025-03-20 15:33:00

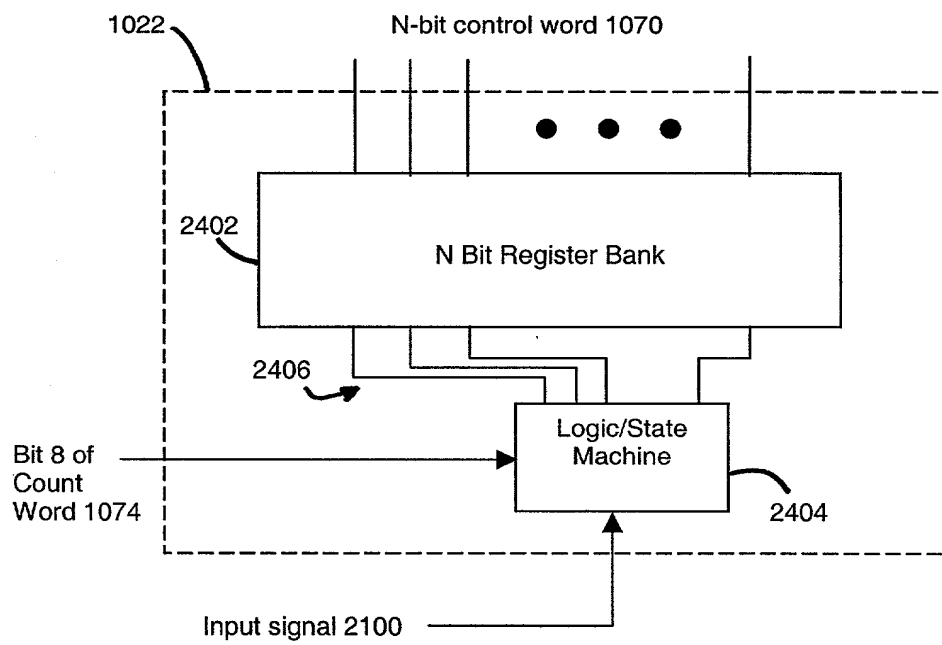


FIG. 24

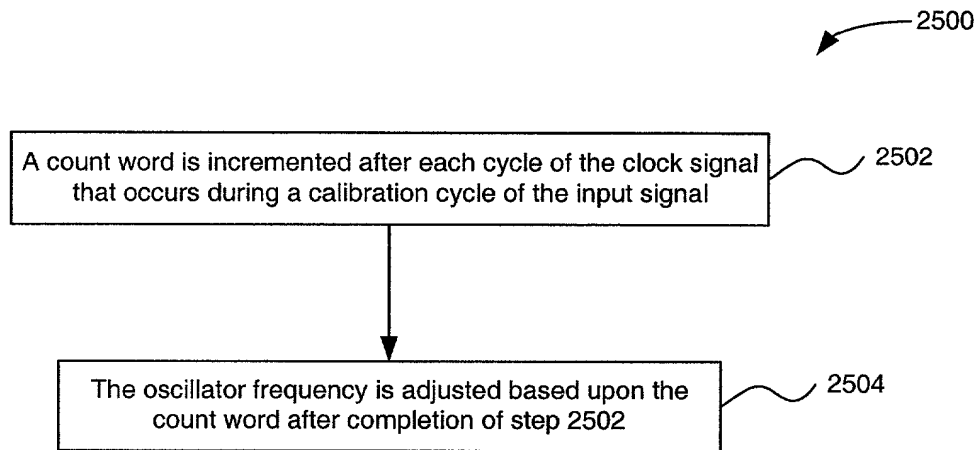


FIG. 25A

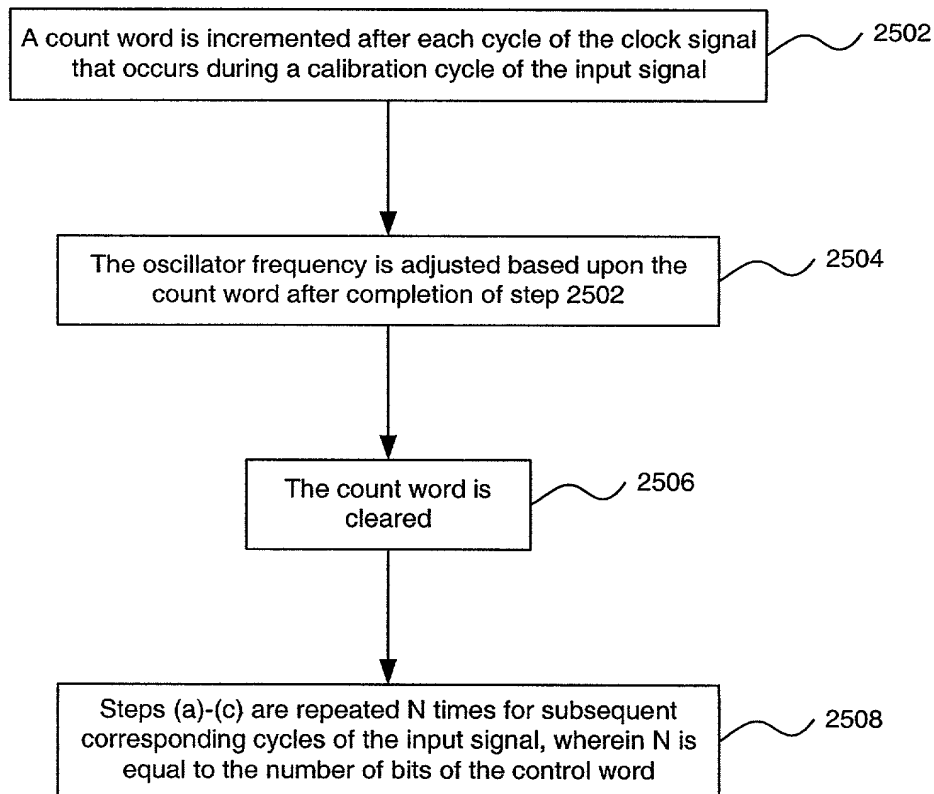


FIG. 25B

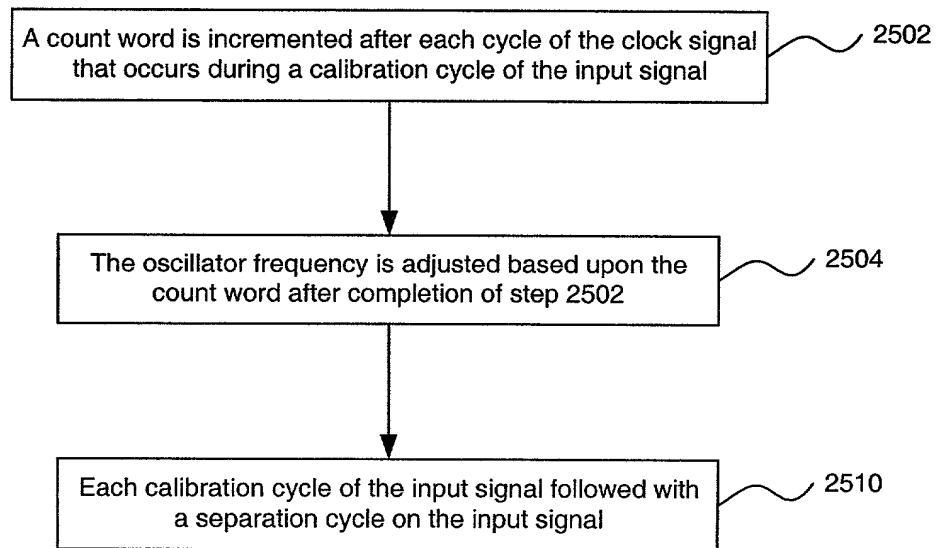


FIG. 25C

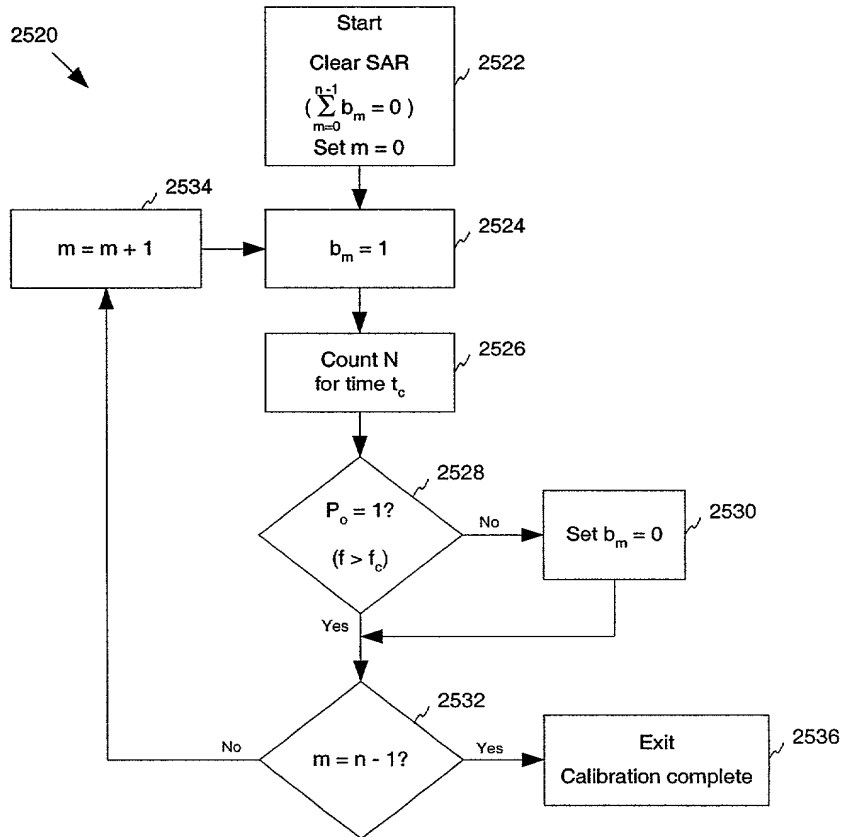


FIG. 25D

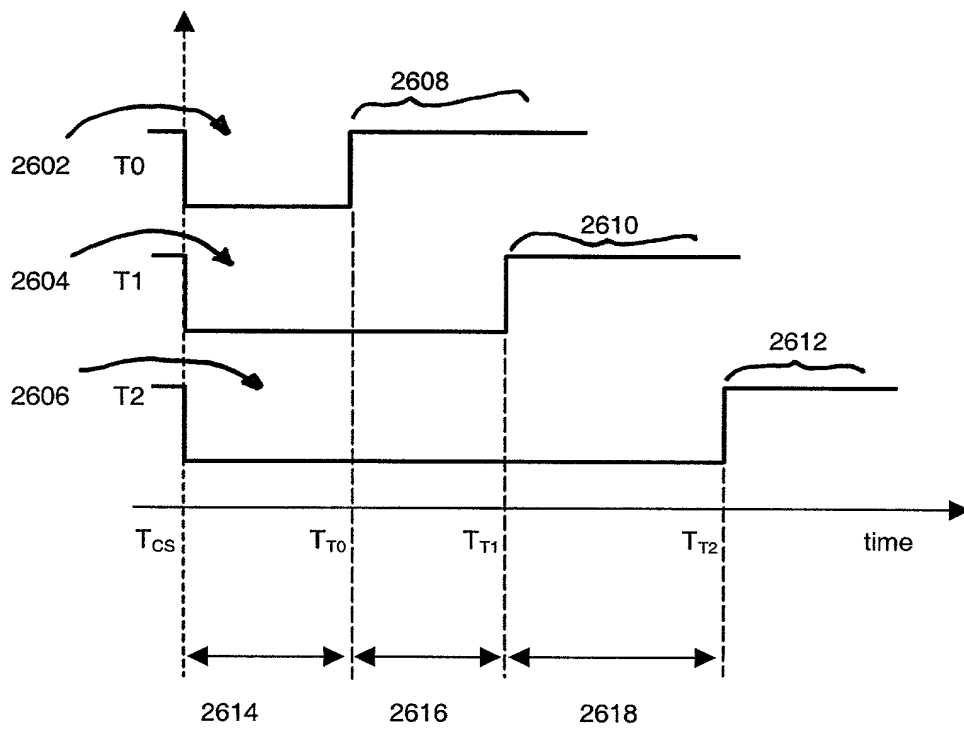


FIG. 26A

Data Symbol Timing Chart

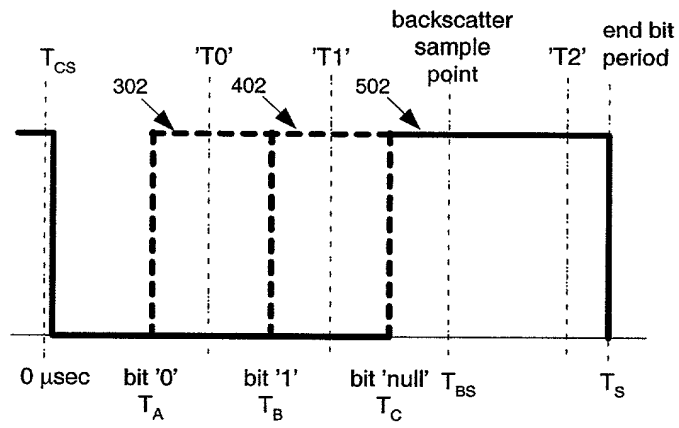


FIG. 26B

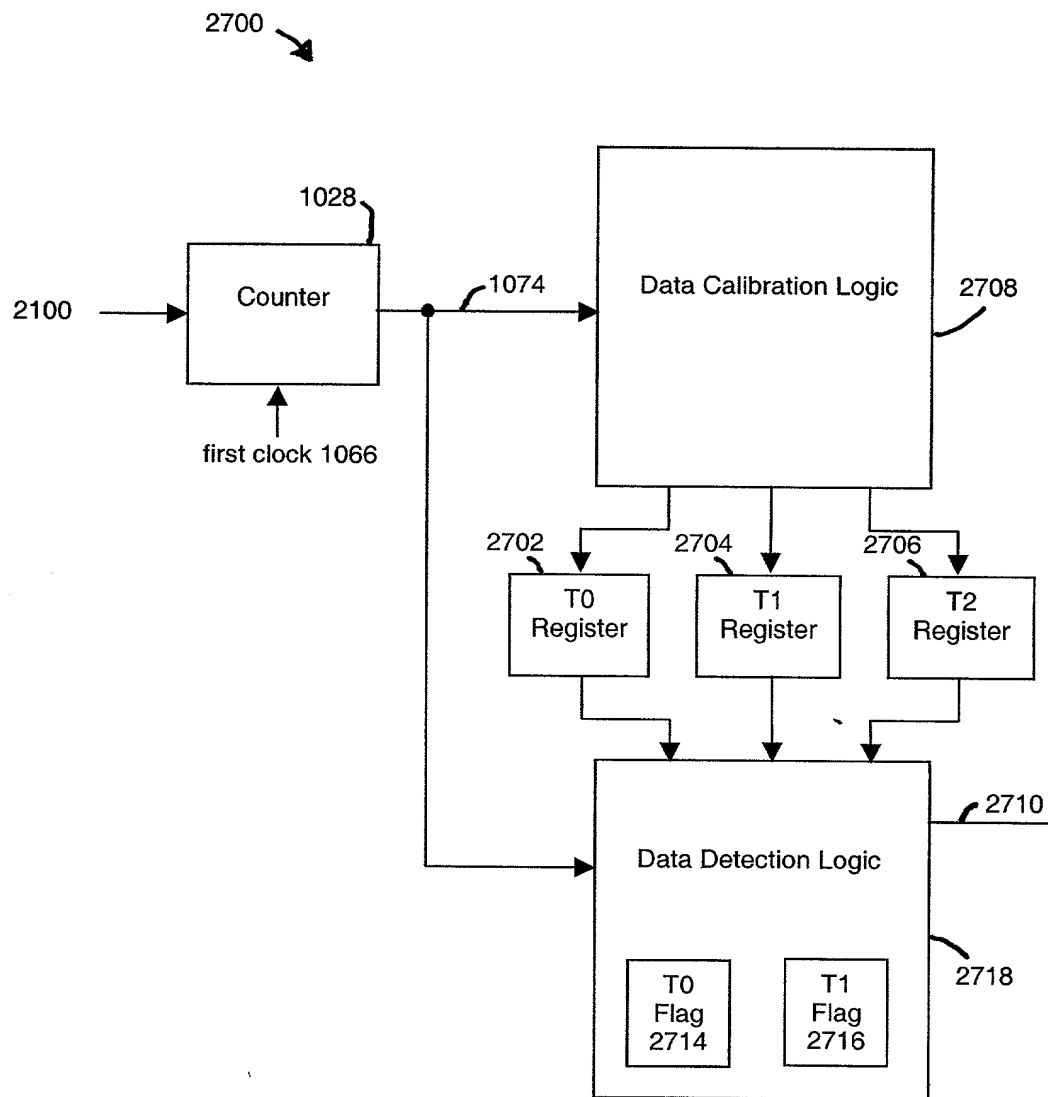


FIG. 27

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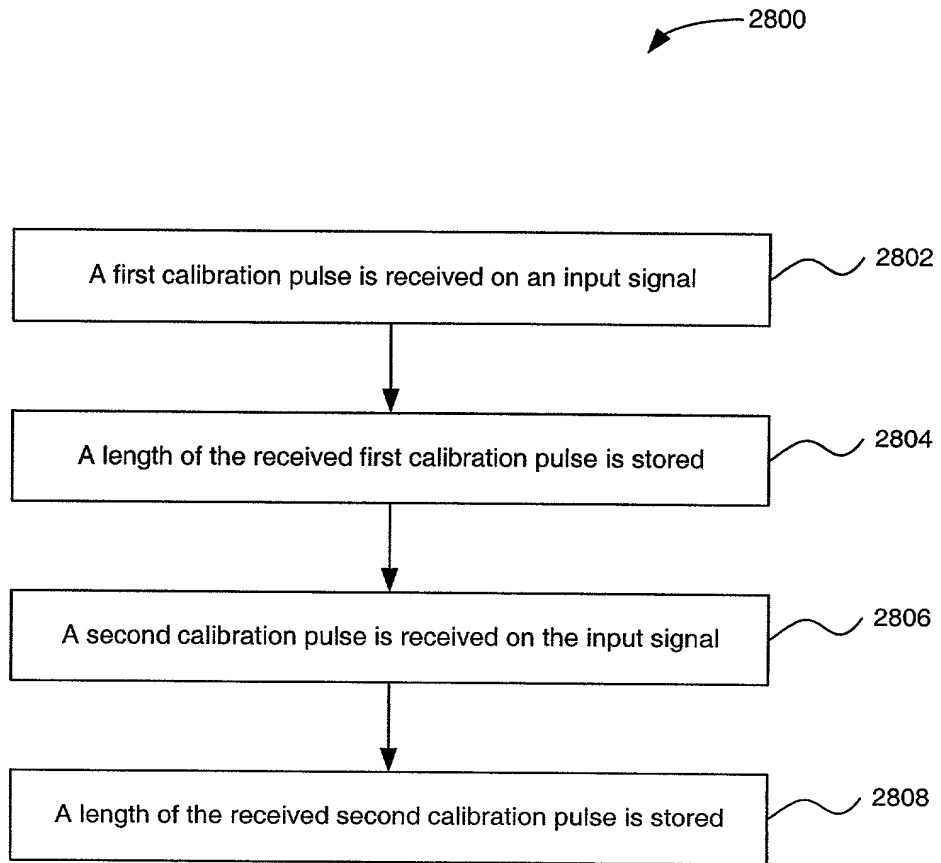


FIG. 28A

2800

From flowchart 2800

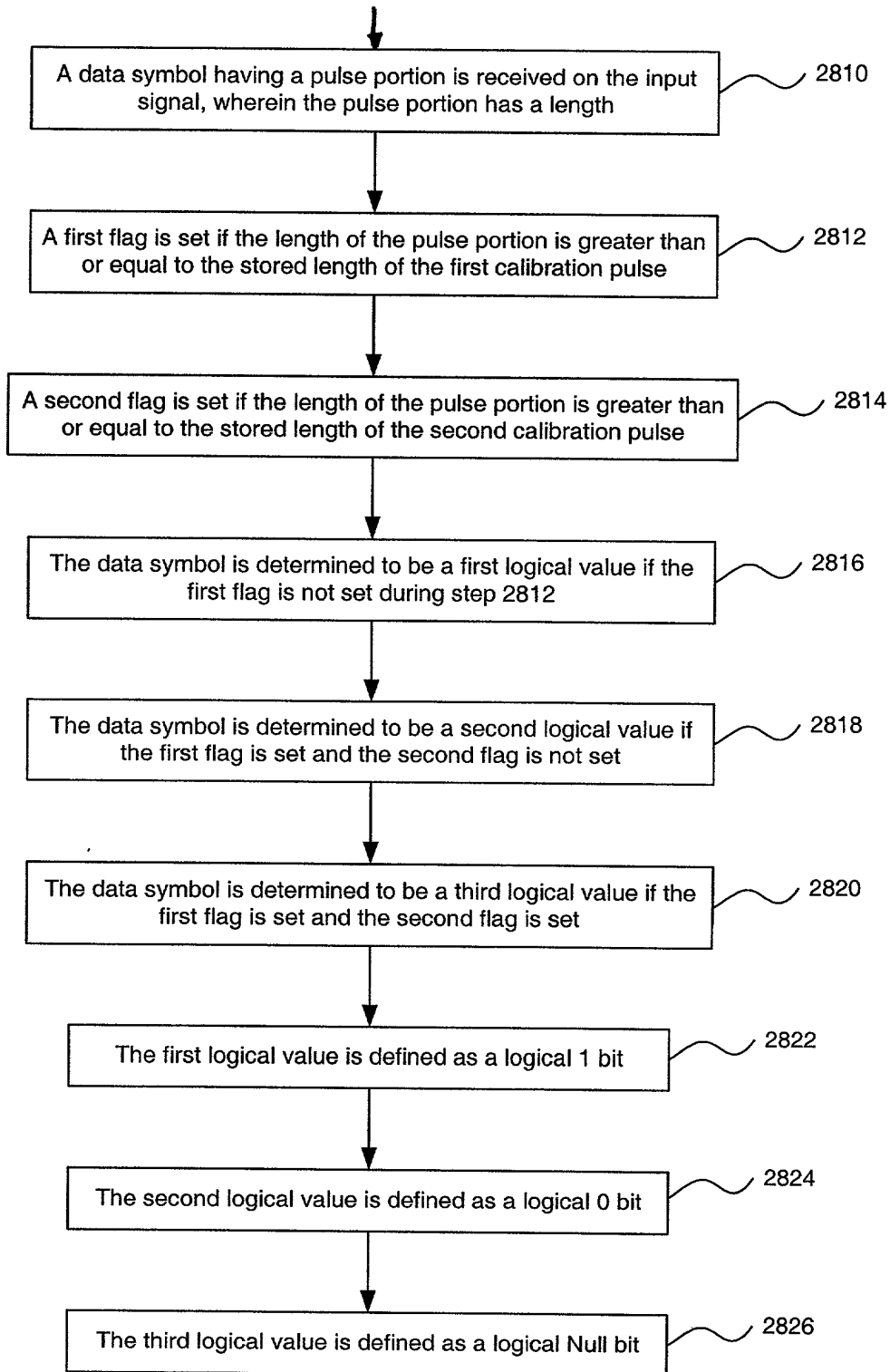


FIG. 28B

2025 RELEASE UNDER E.O. 14176

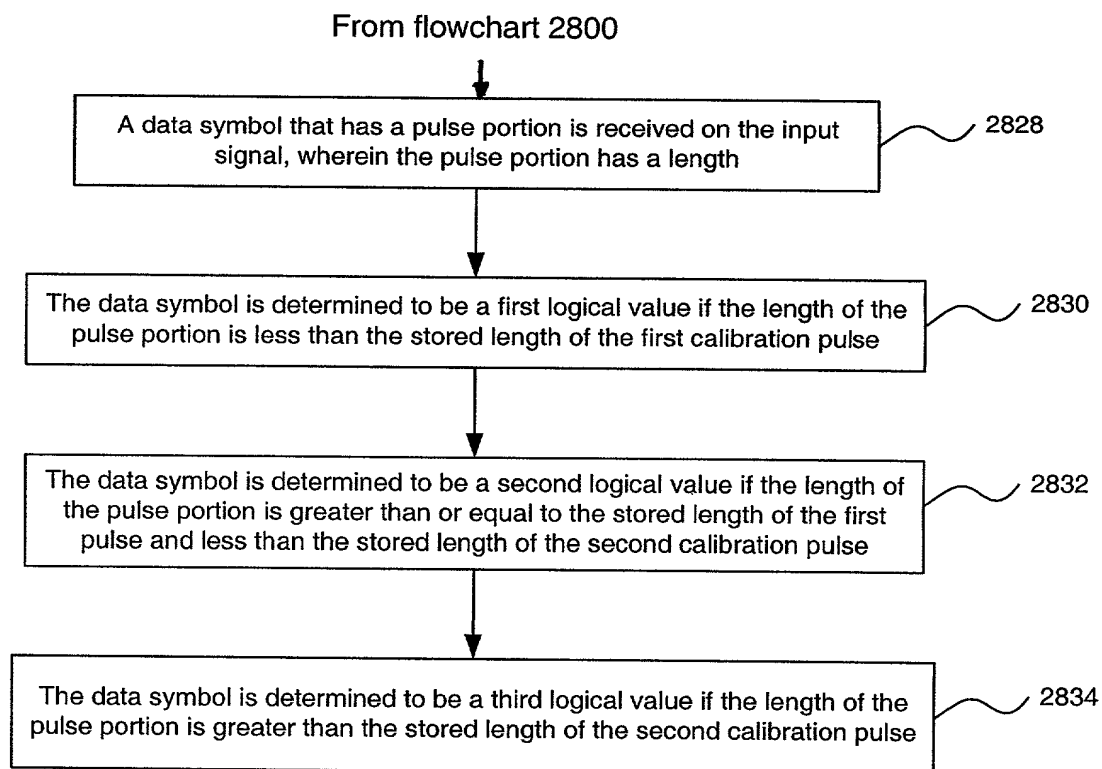


FIG. 28C

2025 RELEASE UNDER E.O. 14176

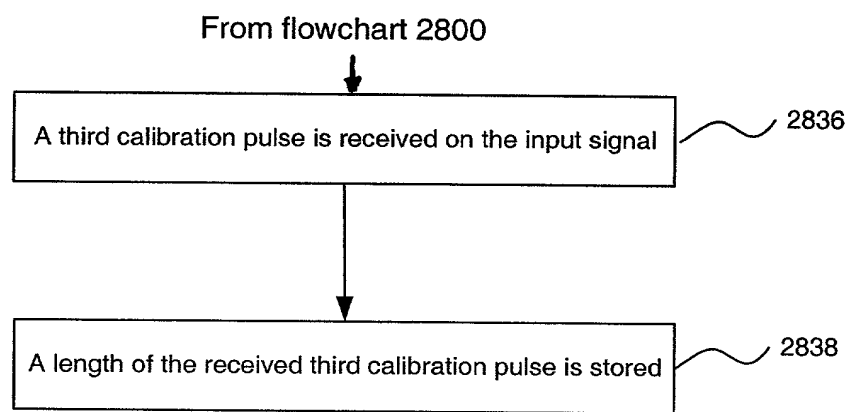


FIG. 28D

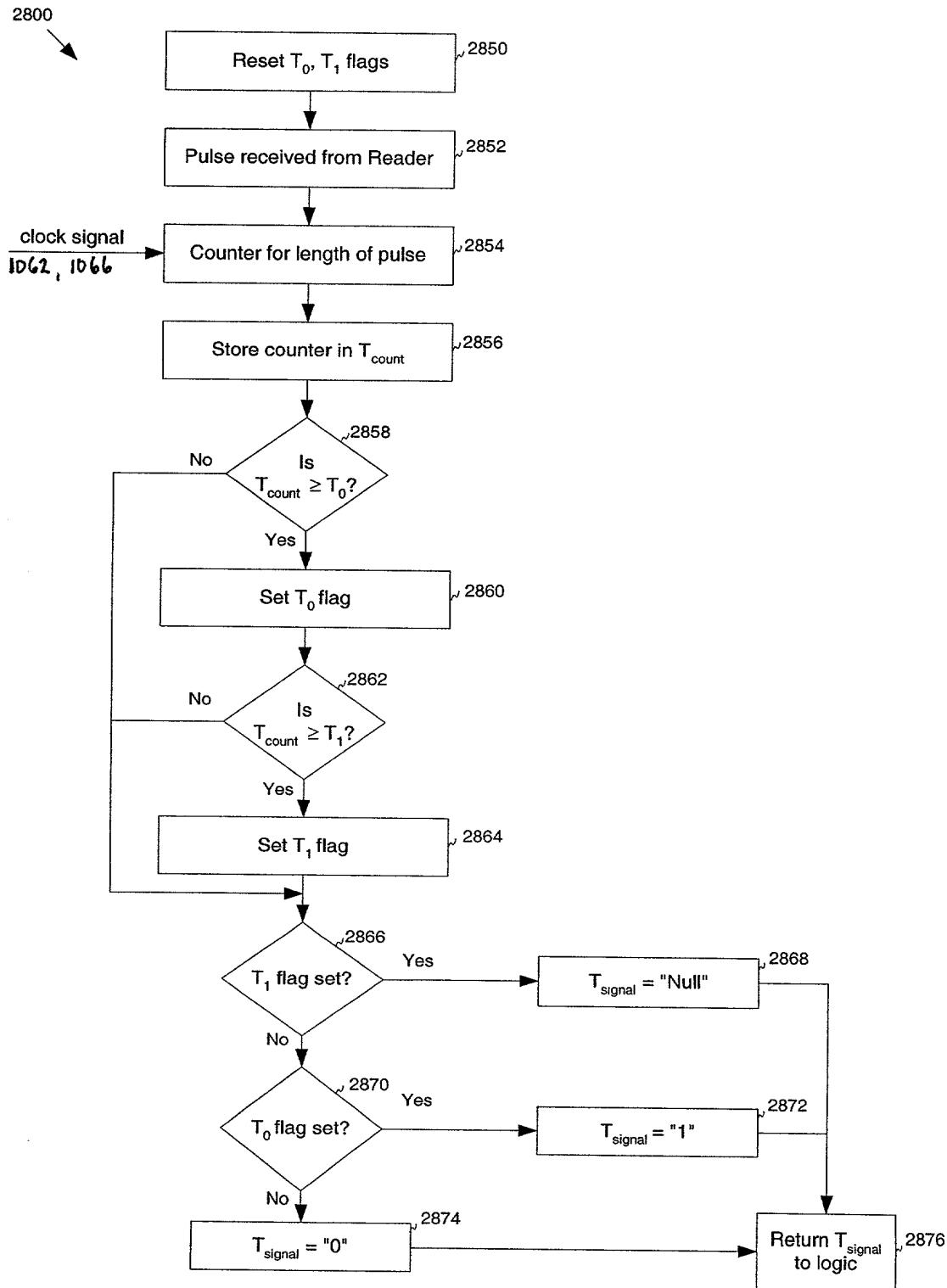


FIG. 28E

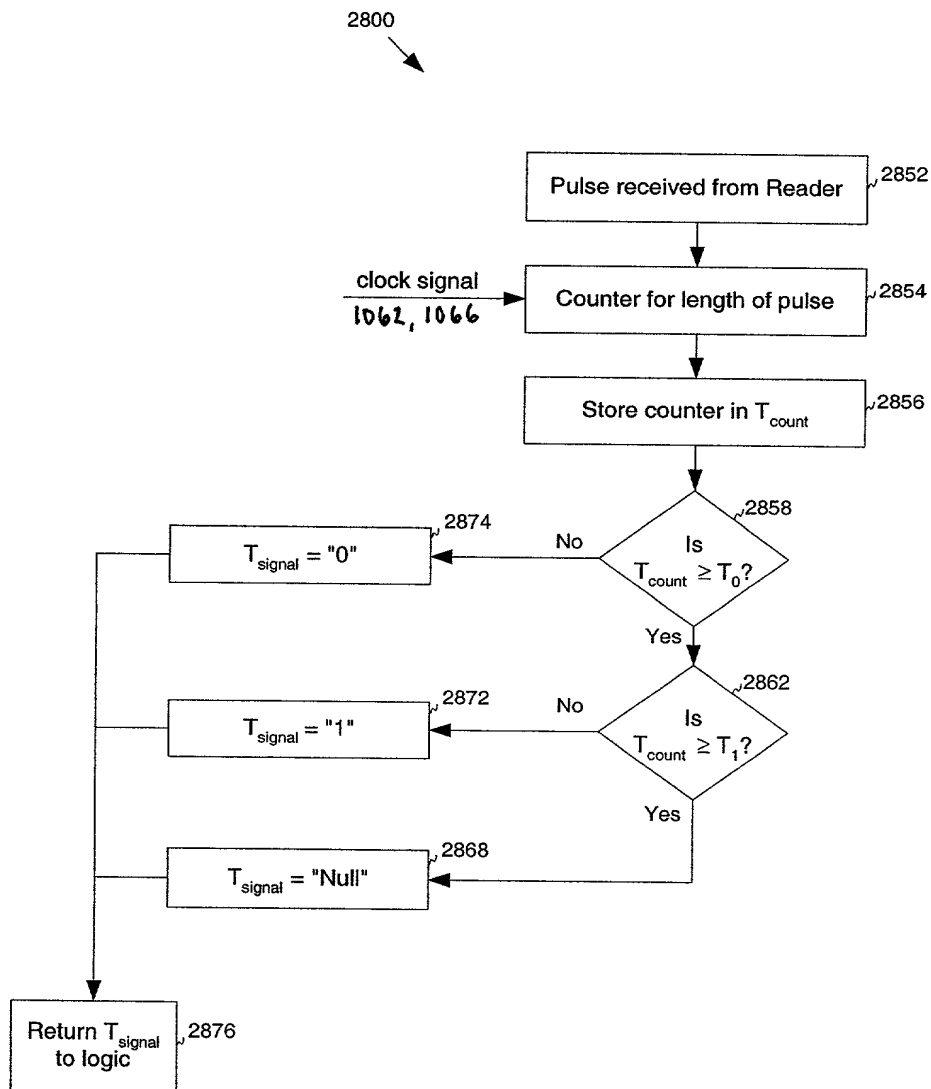
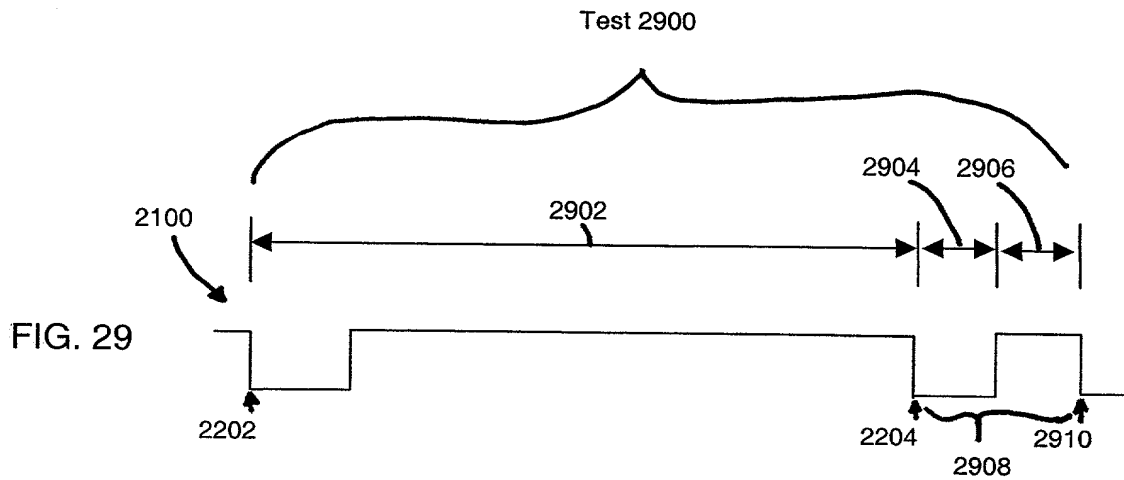


FIG. 28F



Analog Front End

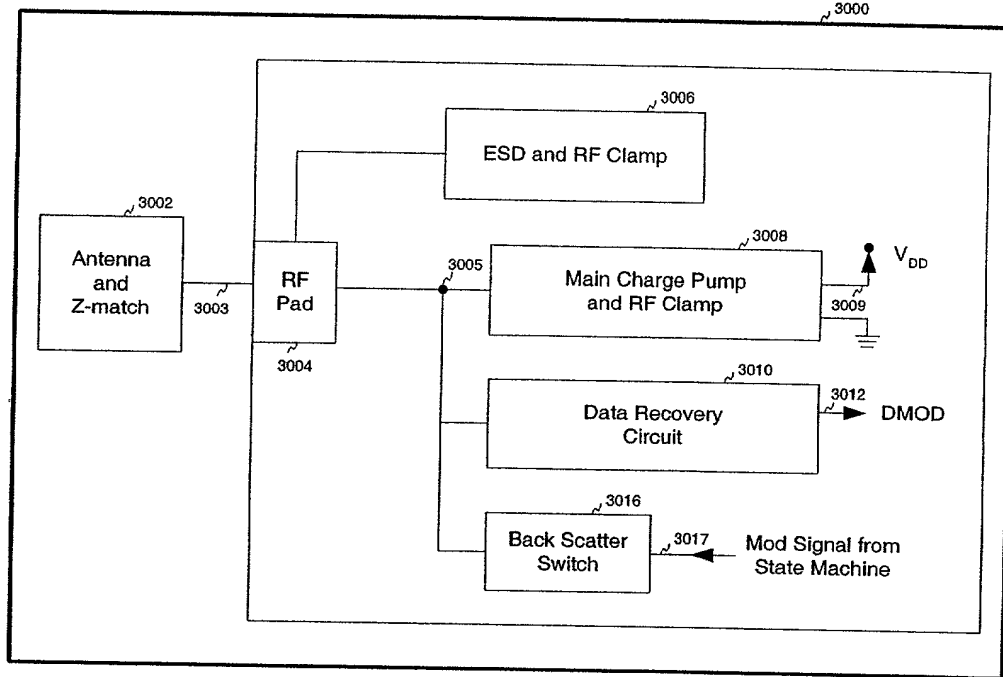


FIG. 30

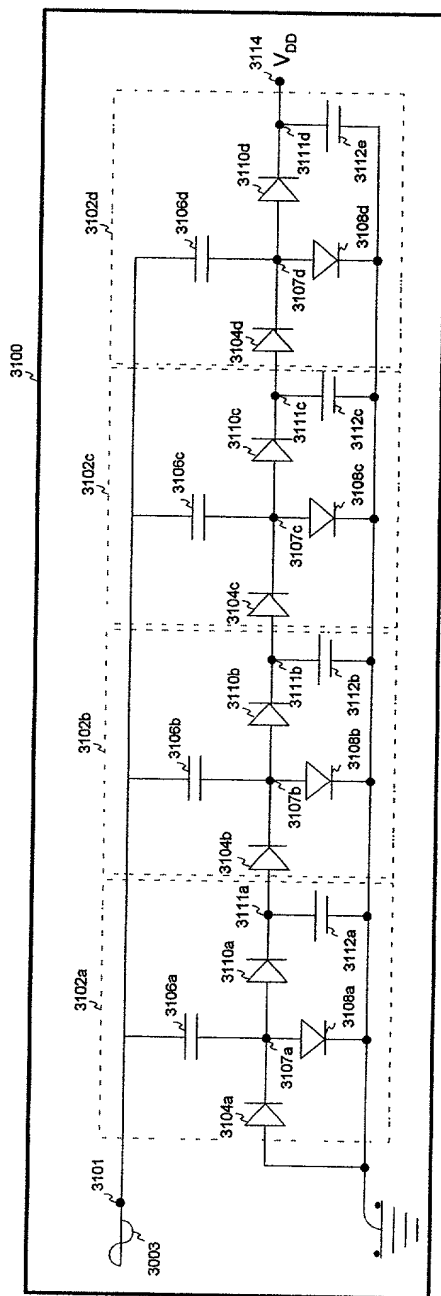


FIG. 31

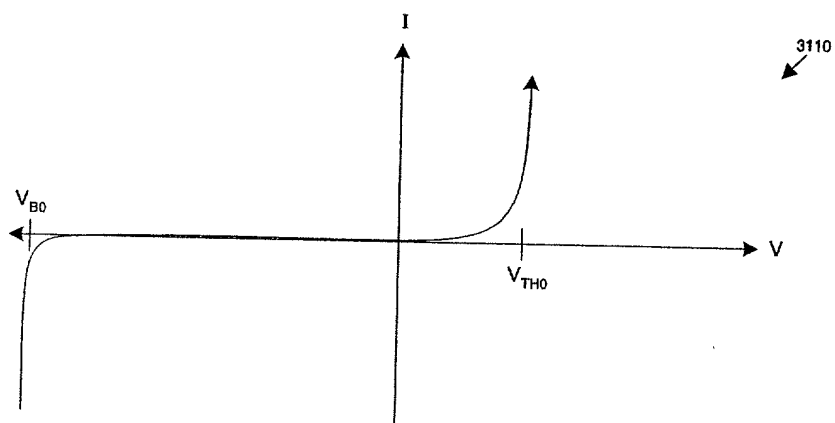


FIG. 32A

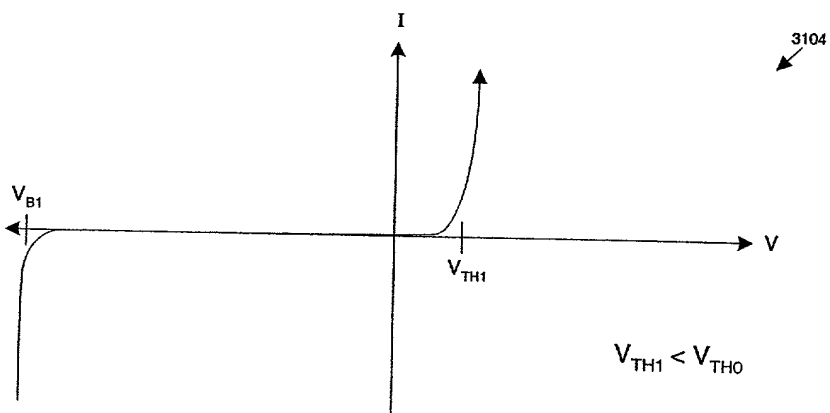


FIG. 32B

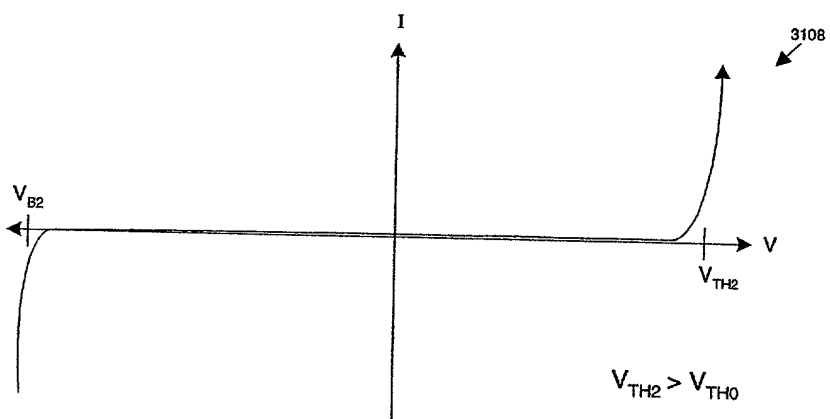


FIG. 32C

10072835 00400
2023/02/01 09:22:00

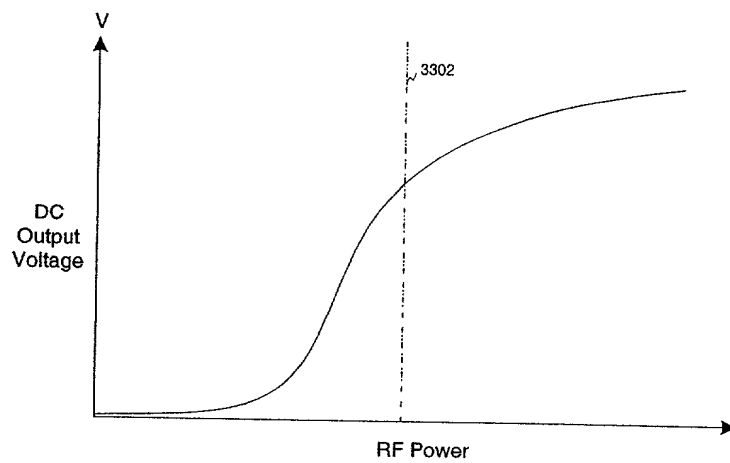


FIG. 33A

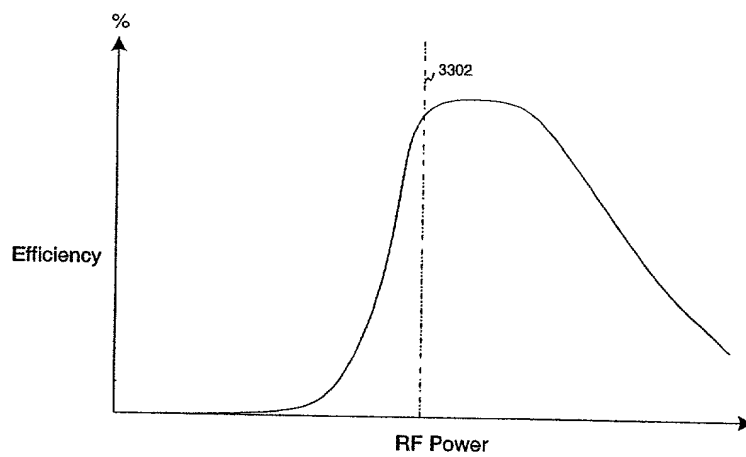


FIG. 33B

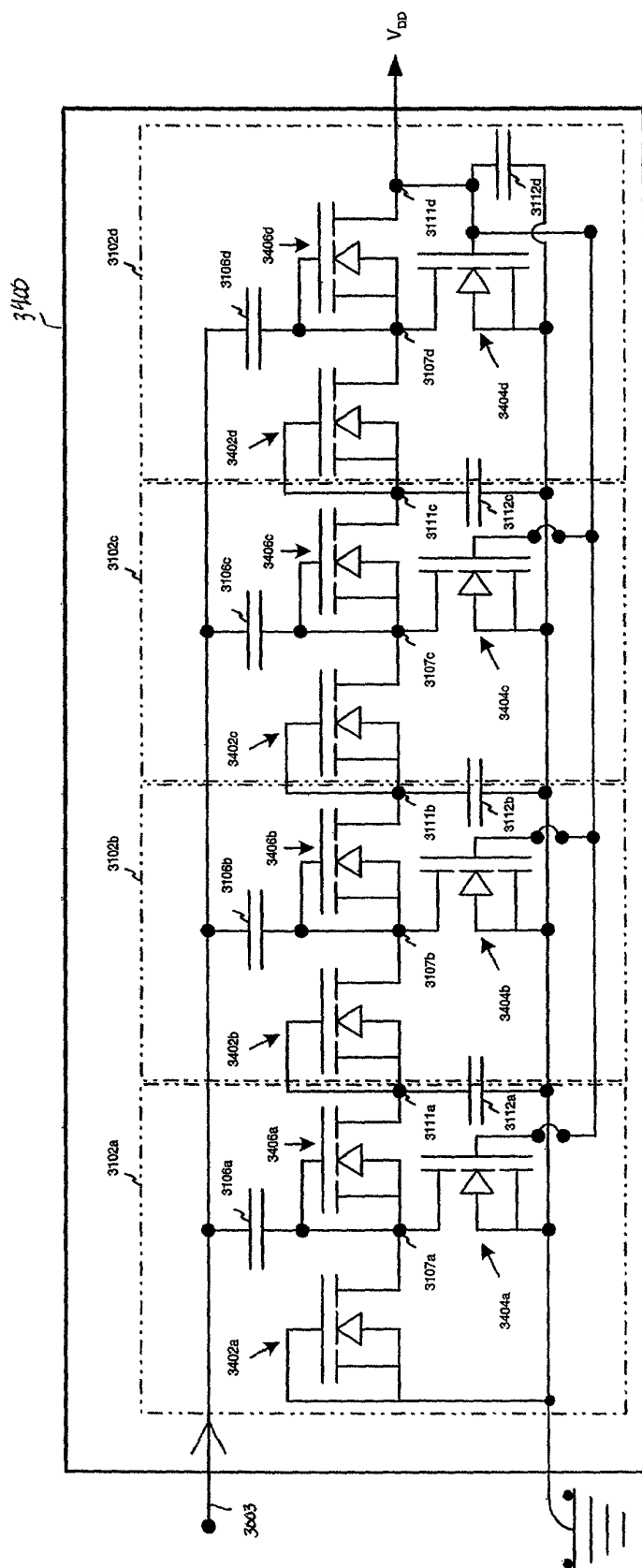


FIG. 34A

3400

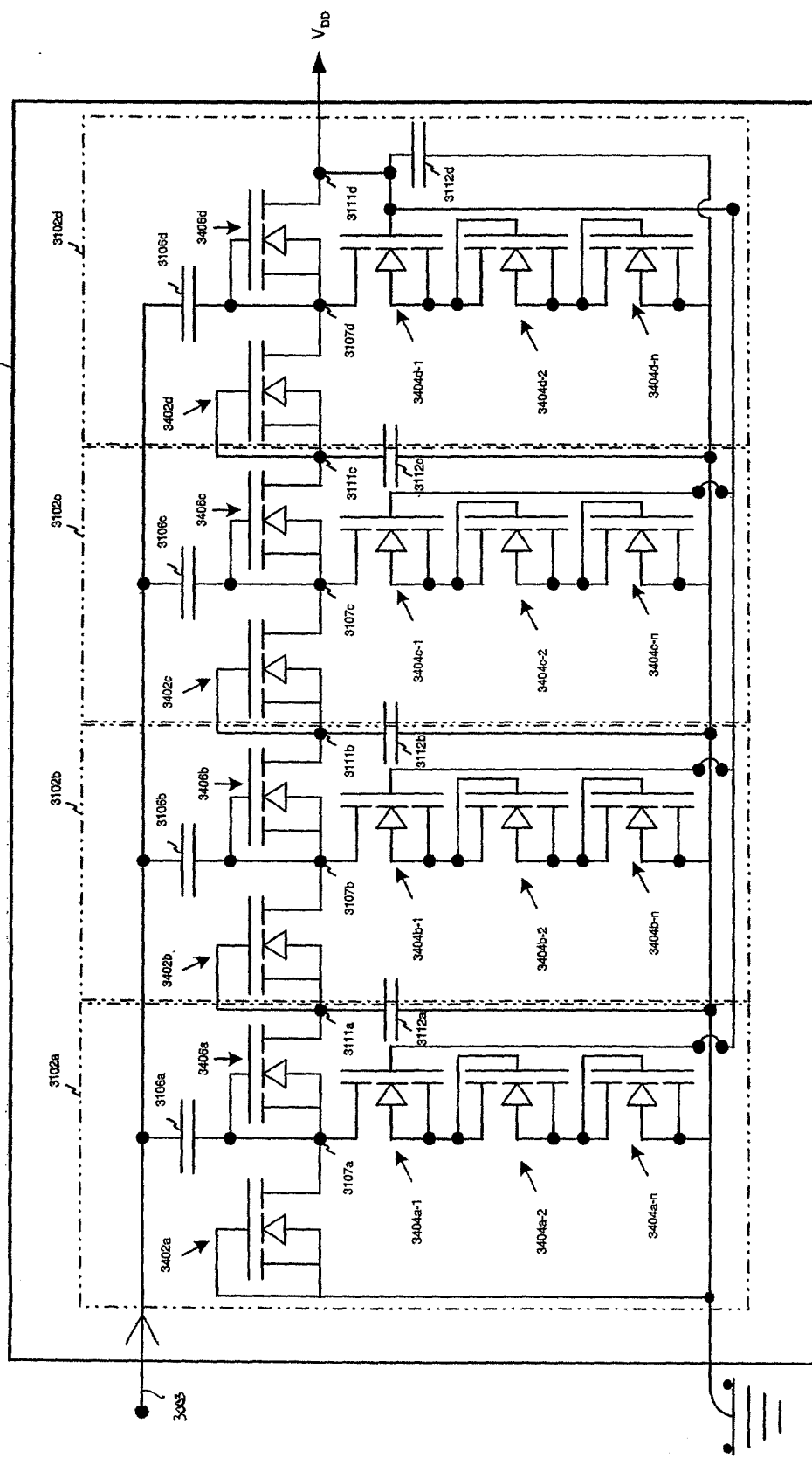


FIG. 34B

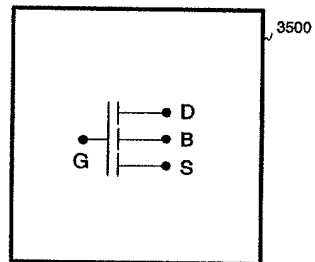


FIG. 35A

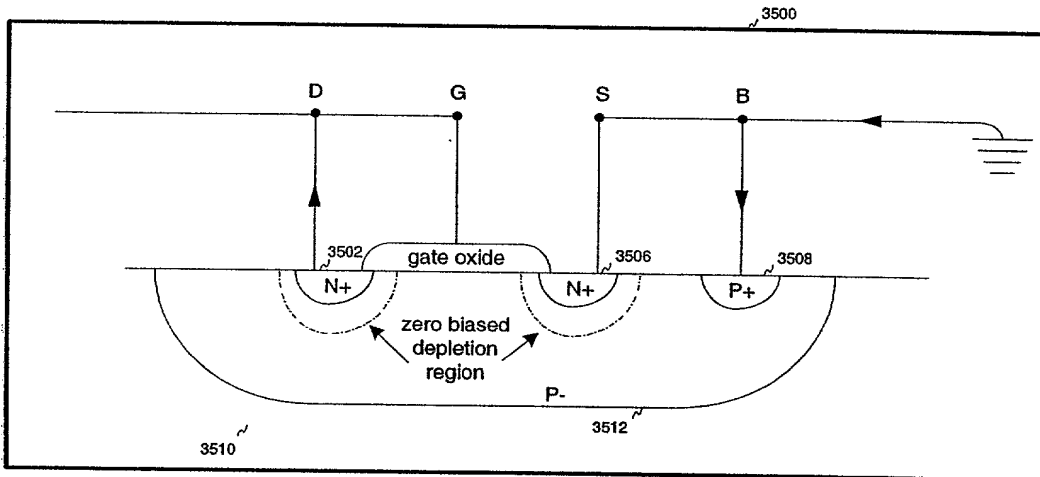


FIG. 35B

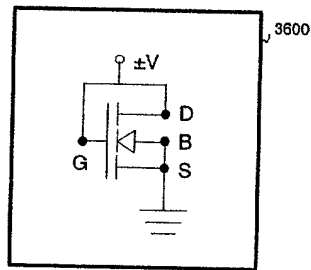


FIG. 36A

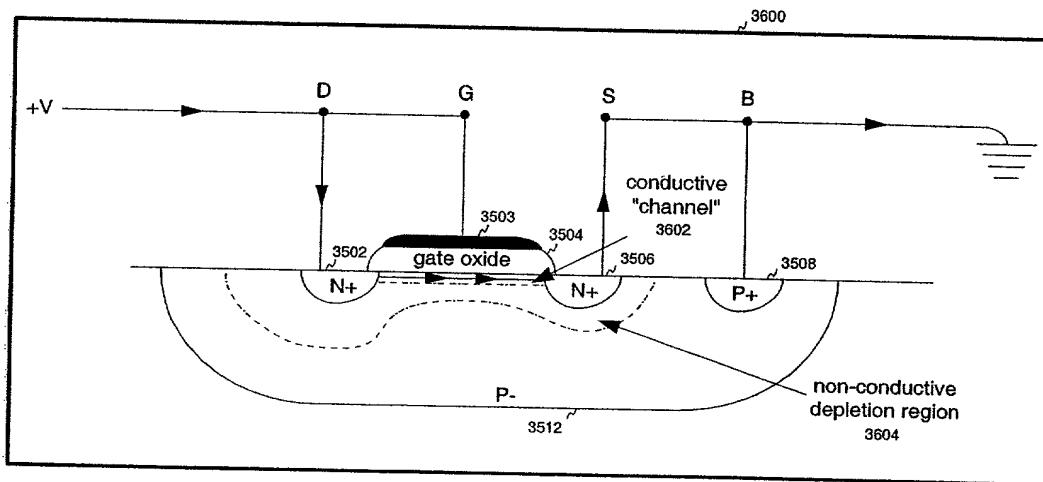


FIG. 36B

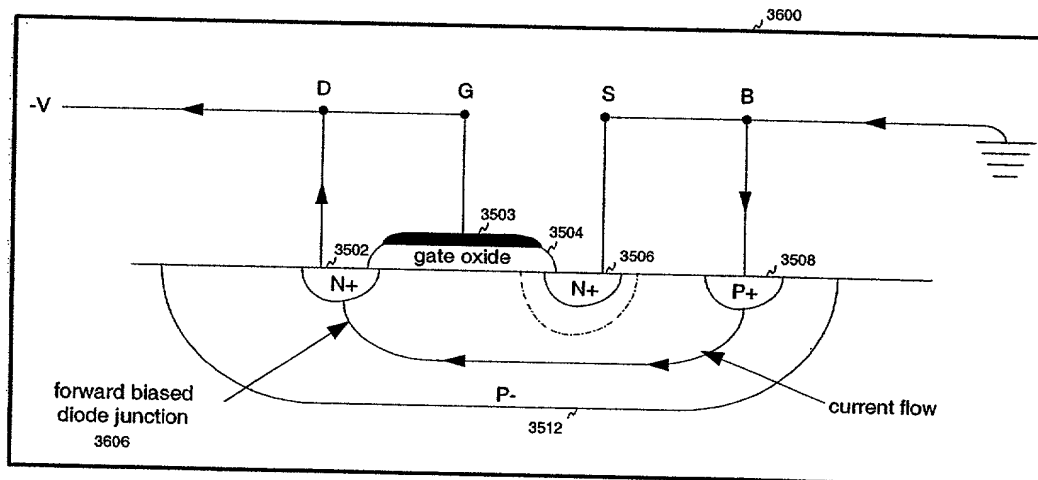


FIG. 36C

10072385.04302
202120 53322001

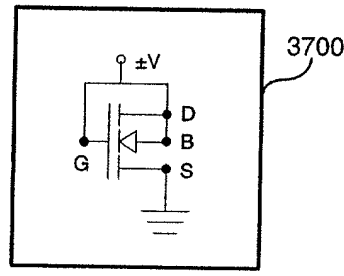


FIG. 37A

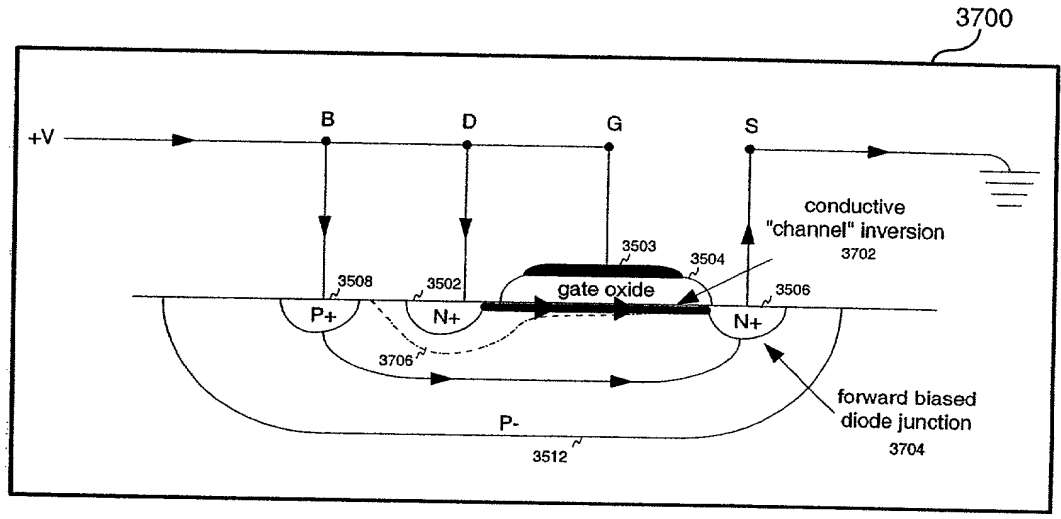


FIG. 37B

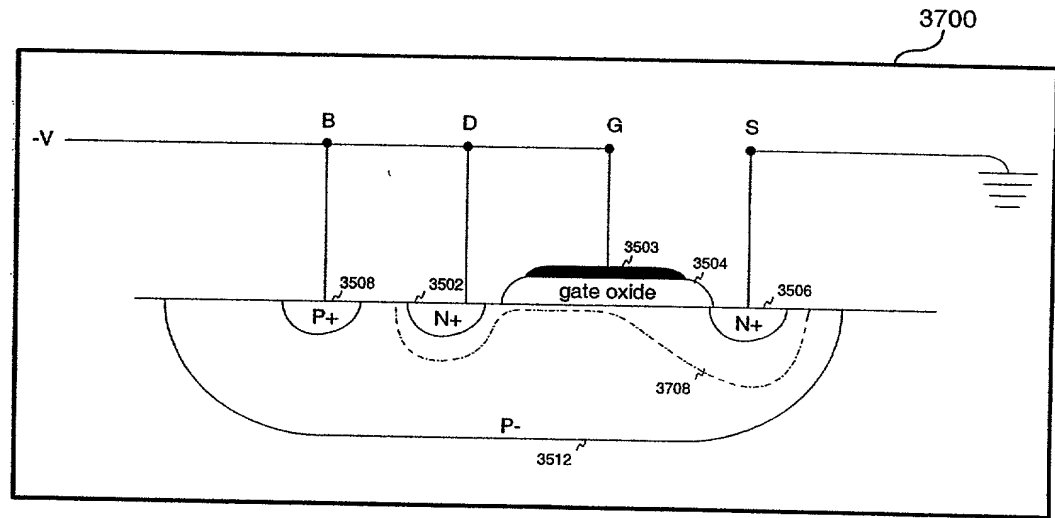


FIG. 37C

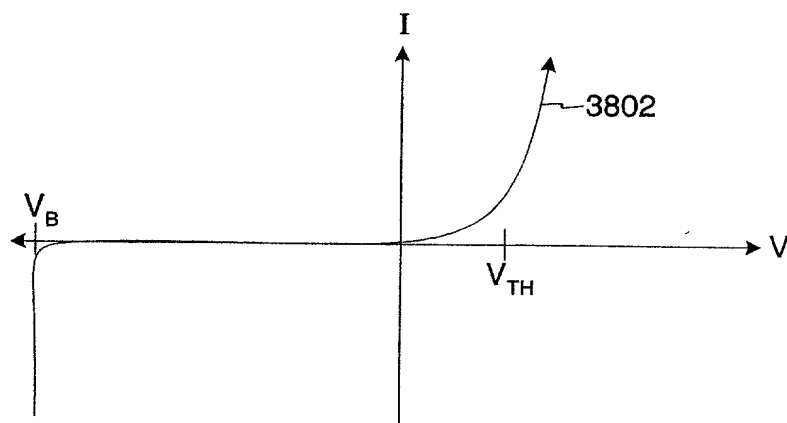


FIG. 38A

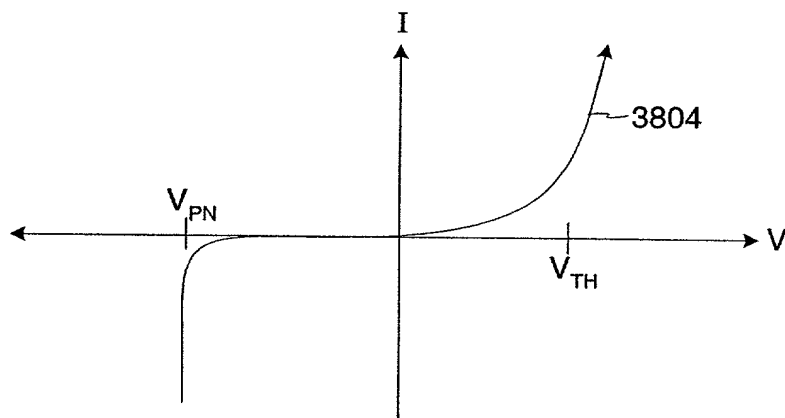


FIG. 38B

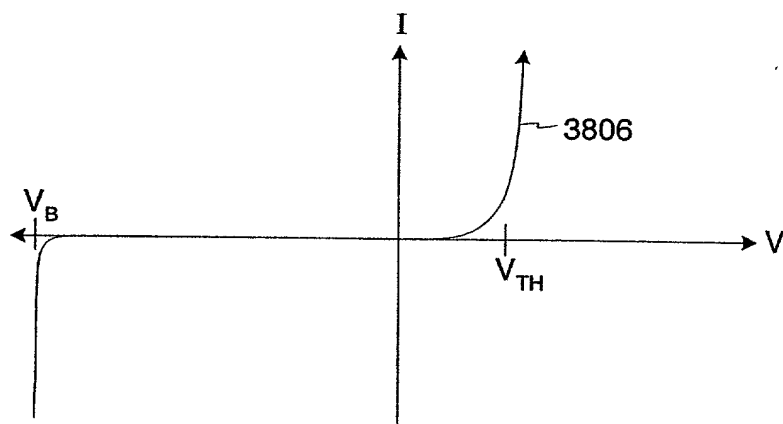


FIG. 38C

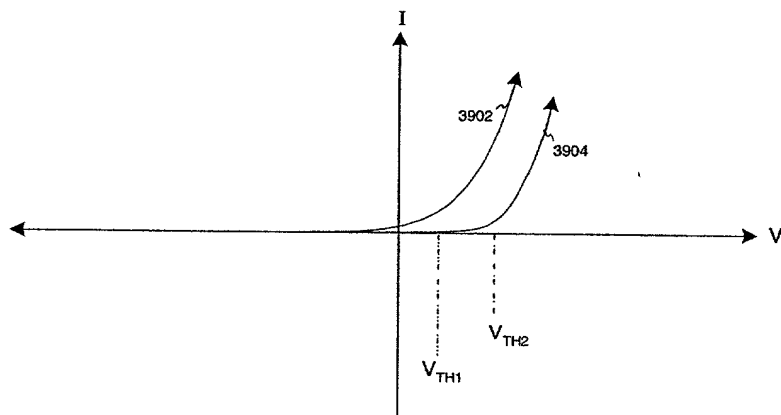


FIG. 39

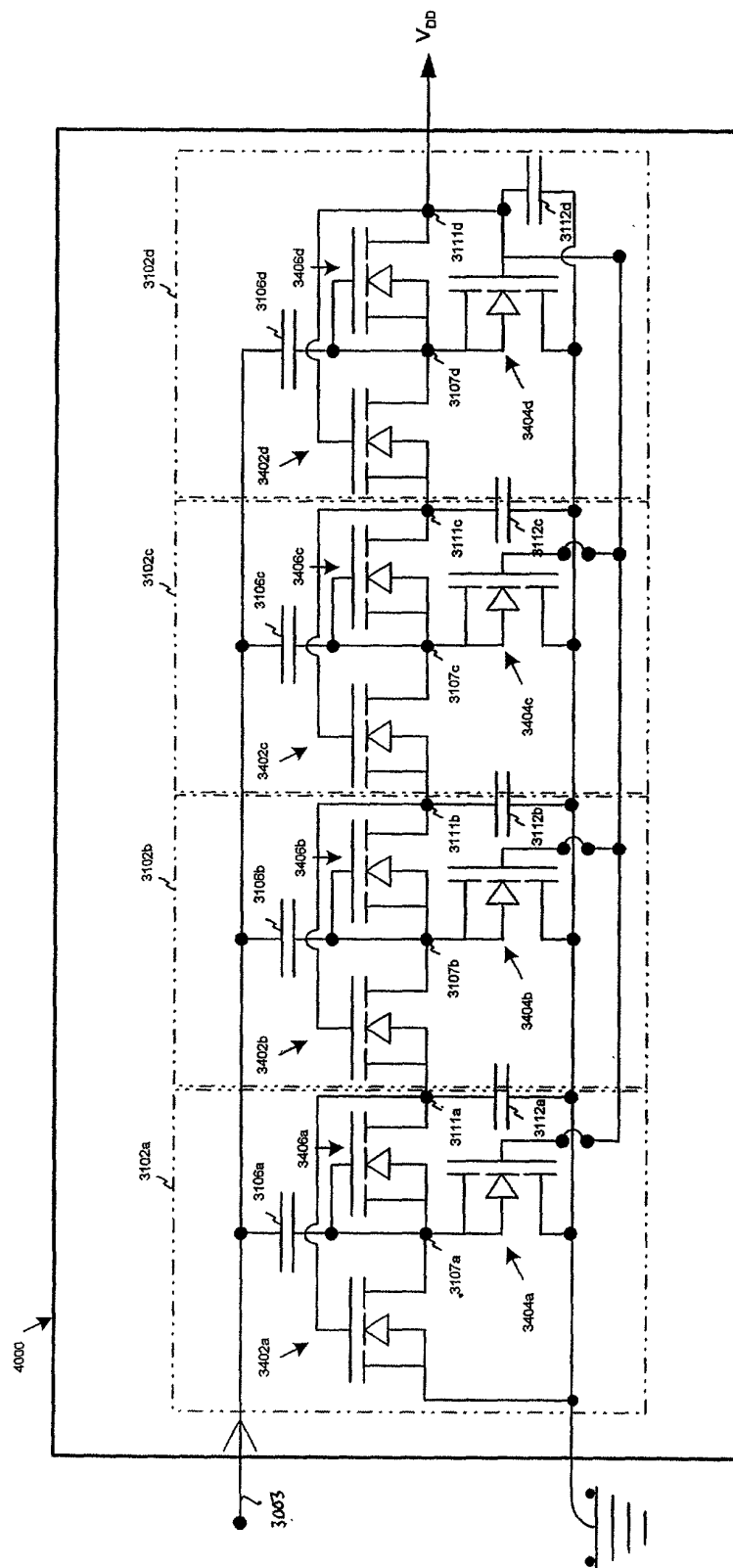


FIG. 40A

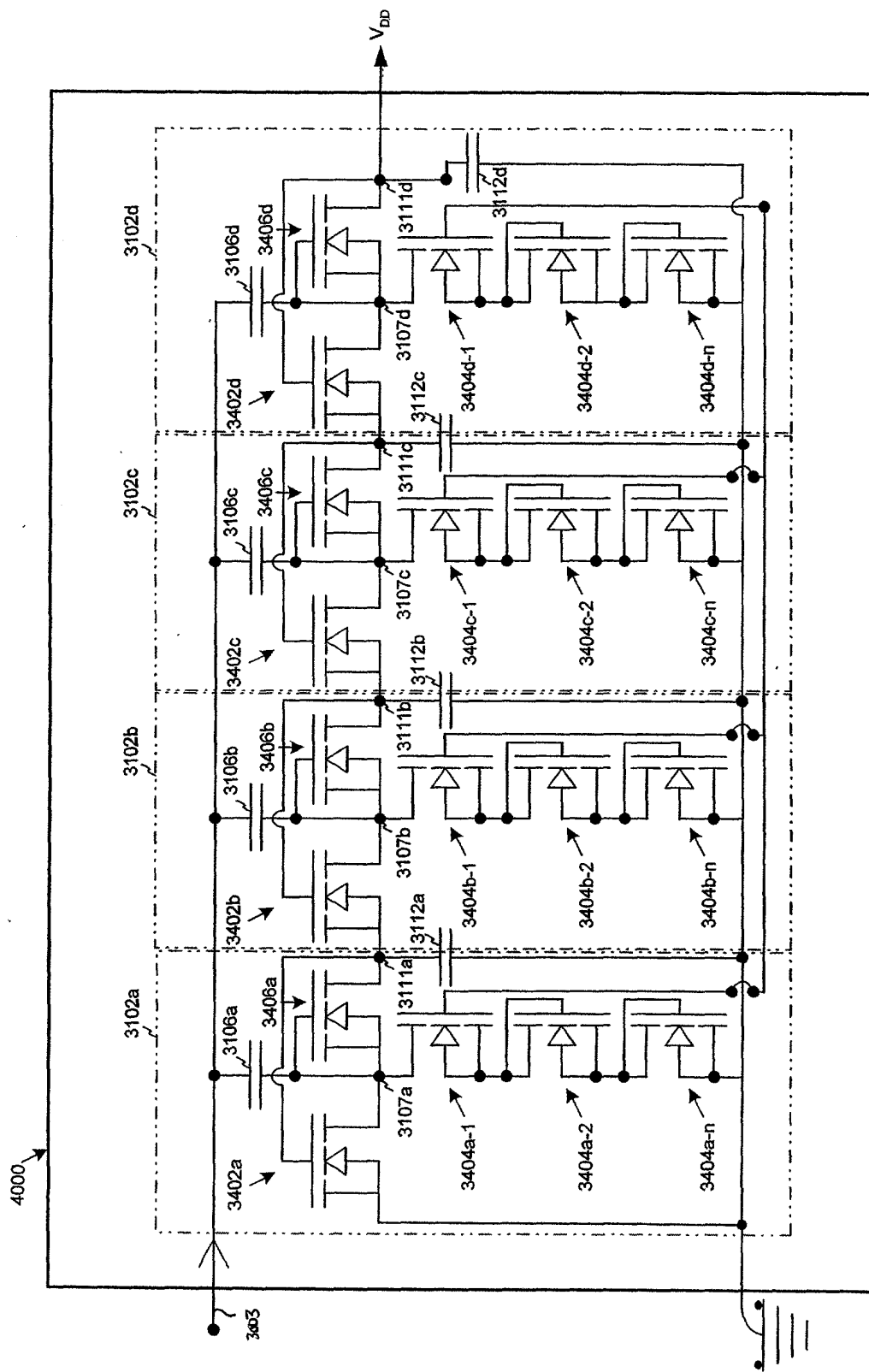


FIG. 40B

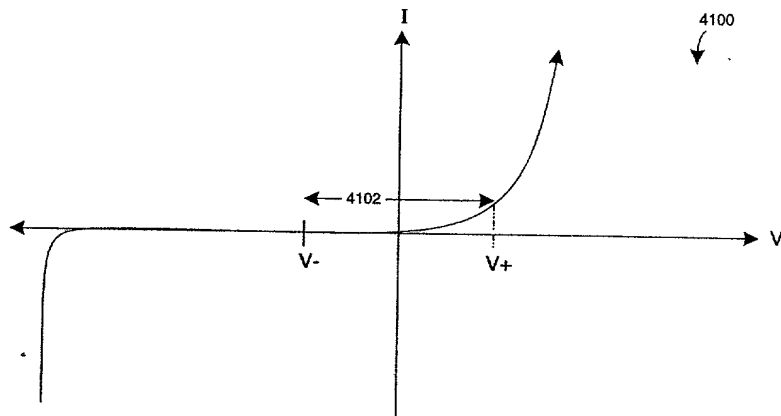


FIG. 41A

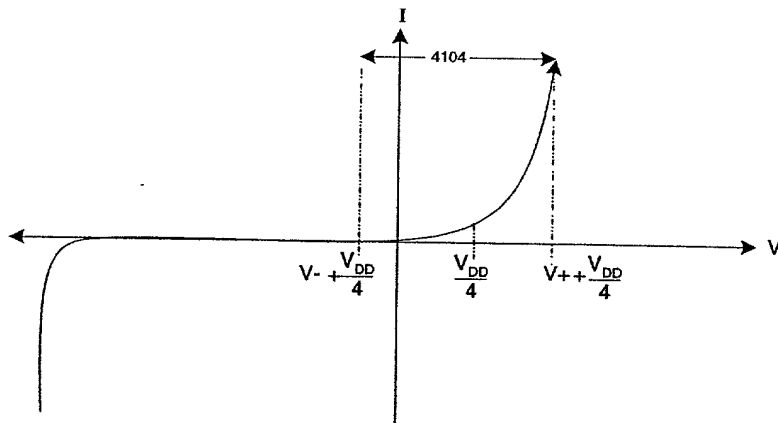


FIG. 41B

2024-2025

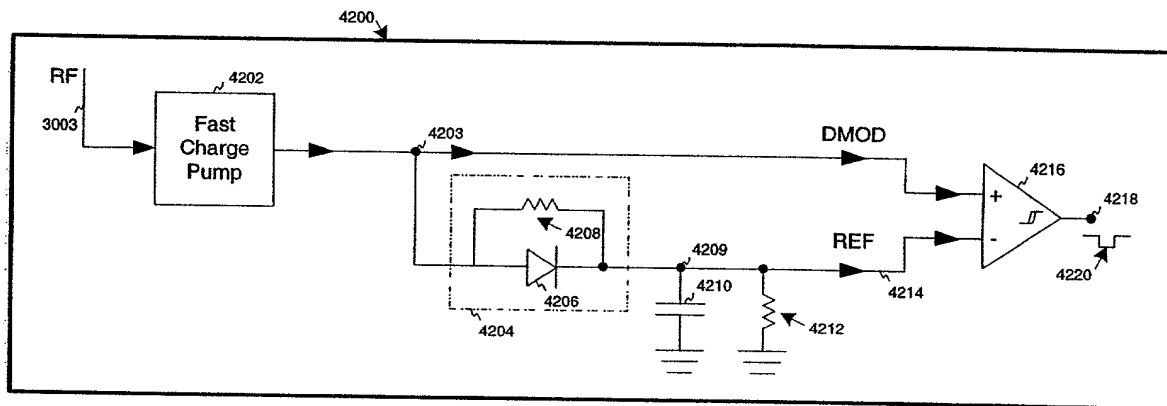


FIG. 42

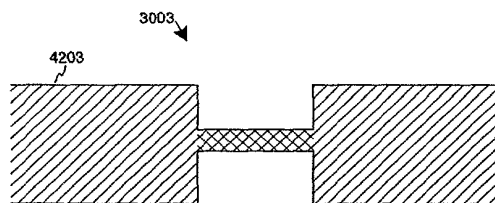


FIG. 43A

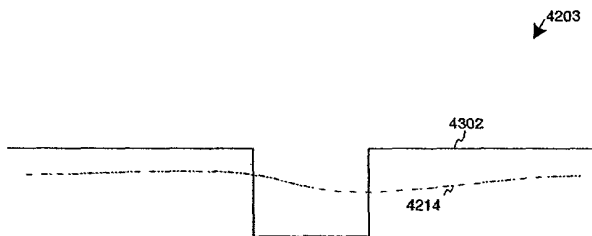


FIG. 43B

[illegible]

FIG. 44

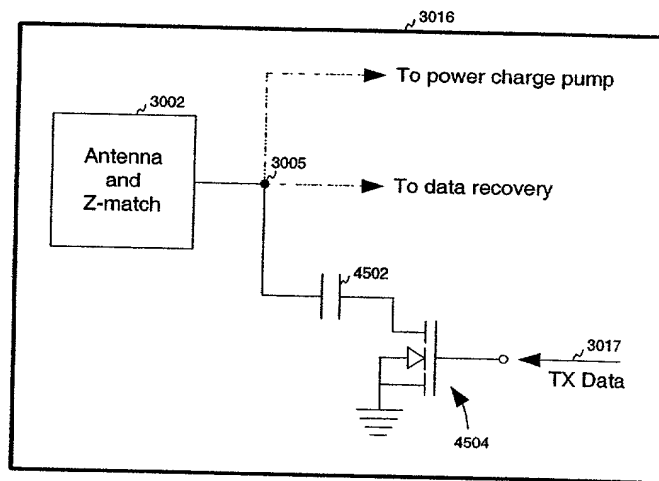


FIG. 45